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# East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

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8 November 1984

## EAST EUROPE REPORT

### ECONOMIC AND INDUSTRIAL AFFAIRS

#### CONTENTS

##### GERMAN DEMOCRATIC REPUBLIC

Cooperation With USSR Merchant Fleet (SEEWIRTSCHAFT, No 7, Jul 84).....	1
GDR Announces 200,000th Patent, Leader in Field (NATIONAL-ZEITUNG, 26 Sep 84; PRESSE-INFORMATIONEN, No 103, 4 Sep 84).....	5
Recent Increase Detailed Background, Applications Discussed	

##### HUNGARY

Nyers Writes on Inevitability of Evolving Reform (Rezso Nyers; TARSADALOM KUTATAS, No 2, 1984).....	13
FIGYELO Editor Touts Economic Reform at Warsaw Seminar (ZYCIE GOSPODARCZE, No 33, 12 Aug 84).....	20
Statistical Office Ranks Top 100 Enterprises (FIGYELO, 13 Sep 84).....	30

##### POLAND

Progress on Mathematical Model of Socioeconomic Crisis (Jerzy Eysymontt, Wojciech Maciejewski; EKONOMISTA, No 5-6, 1983).....	39
Impact of Crop Pests, Diseases in 1983, 1984 Discussed (NOWE ROLNICTWO, No 5, May 84).....	42

## YUGOSLAVIA

Development of Socialized Sector of Agriculture to 1980 (Josip Defilippis; GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA, Nos 7-8, Jul-Aug 84).....	73
Employment Data in Socialized Sector of Agriculture, Forestry (GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA, Nos 7-8, Jul-Aug 84).....	78
Croatian Economic Cooperation With Kosovo (PRIVREDNI PREGLED, 23 Aug 84).....	80
Switzerland Trains Yugoslav Construction Workers (PRIVREDNI PREGLED, 28 Aug 84).....	82
Republic Breakdown in Foreign Trade, January-June 1984 (Milorad Urosevic; PRIVREDNI PREGLED, 30 Aug 84).....	83
Decline in Capital Investment Work Abroad (Stojan Zdravkovic; PRIVREDNI PREGLED, 27 Sep 84).....	86

COOPERATION WITH USSR MERCHANT FLEET

East Berlin SEEWIRTSCHAFT in German Vol 16 No 7, Jul 84 pp 315-316

[Unattributed article: "Jointly on the Course for Peace; the Cooperation of the GDR and USSR in Merchant Shipping"]

[Text] In July of this year the workers of the workers of the merchant shipping industry of the USSR are celebrating the 60th anniversary of the founding of their merchant fleet. The existence of this first socialist fleet was of great importance for the buildup of a merchant shipping industry in the GDR. From the very first hour after Hitler's fascist regime was smashed and a democratic economic order was created, close cooperation began between the two countries in the area of merchant shipping in order to promote mutual trade. The harbor installations in the seaports of Rostock, Wismar and Stralsund, which had been destroyed, were reconstructed in the first post-war months with the support of Soviet organs, so that they could unload the supplies arriving on the sealanes from the Soviet Union for our people. This difficult initial stage of starting up the port industry was managed by the Russo-German transportation and shipping company, which was called "Derutra" at the time. In 1954 "Derutra" was handed over to the GDR as the property of the people and is now known worldwide under the name Deutrans.

Following the founding of the GDR on 7 October 1948, under the leadership of the party of the working class, the workers intensified their efforts to rebuild industry, particularly the basic materials and heavy industries, as a prerequisite for the complex development of all branches of the economy. The growth in the volume of foreign trade--particularly with the Soviet Union and other socialist countries--over the sea lanes necessitated the improvement of a domestic merchant trading fleet as well as the improvement and expansion of our seaports, including the supply and service installations, that is to say, the creation of a merchant shipping industry. Consequently, at the 11th party congress of the SED, the decision was made to expand the mercantile fleet of the GDR. The first ship in the GDR's mercantile fleet, the "Vowaerts," which was put into service on 13 October 1950, made its maiden voyage to Riga and traded between Soviet Baltic ports and seaports of the GDR until it was de-commissioned.

With the foundation of the VEB Deutsche Seereederei Rostock (DSR) on 1 July 1952, a new stage in the development of the mercantile fleet of the GDR was

inaugurated. Again it was the Soviet Union which lent assistance and support. Thus the DSR was able to put into service the first ships, newly constructed for our mercantile fleet, using Soviet design plans, the steamers "Rostock" and "Wismar" and the cargo ship "Stralsund" in the fourth quarter of 1954.

With the concluding of the treaty on trade and shipping between the GDR and the USSR on 27 September 1957, new life was given to the relationships in foreign trade and shipping between the two countries. In the same year a treaty was concluded between the ship inspection and classification of the GDR and the register of the USSR on cooperation in the area of technical inspection and checks of ship safety.

As a result of the construction of a new overseas harbor in Rostock, which was the product of a decision by the Central Committee of the SED in October 1957, additional basic prerequisites for the expansion of foreign trade by sea and coincidentally for cooperation with the USSR in merchant shipping had been created. In order to ensure the increased exchange of goods by sea between the GDR and the USSR, an agreement was concluded between the responsible shipping companies of both countries in June 1958 establishing a joint line service between the Baltic ports of the USSR and the seaports of the GDR. This common line service, which today operates with modern ro-ro and container ships of VEB Deutfracht/Seereederei Rostock and the Latvian shipping company between the ports of Rostock and Riga, has developed into a stable transportation link.

The selfless help and support of the USSR were of crucial importance for the further development of the GDR's maritime shipping industry. In the years from 1958 to 1962, when the GDR was faced with the difficult problem of managing the transportation of important petroleum imports by sea, the Soviet Union supplied five tankers from its production, each of 11,500 tdw. During the extremely harsh winter of 1962-1963 it was not possible to keep the access lanes to GDR seaports open with the small number of domestic icebreakers available at the time. In this serious situation, the USSR made the icebreaker "Vyuga" available, which cleared a safe passage to Rostock for the ships. The current flagship of the GDR's fleet of icebreakers, the "Stephan Jantzen", was built in a Soviet yard.

The steady growth in the exchange of goods between the GDR and the USSR by sea necessitated new forms of cooperation from an organizational point of view. Since 1962 transportation by sea between the two nations has taken place on the basis of the annual transportation protocols concluded between the Ministry for Transportation and Foreign Trade of the GDR and the Ministries of Maritime Fleet and Foreign Trade of the USSR, in which the volumes transported and the tasks of major importance are determined for the particular year. The volume of transportation in maritime trade between the two countries increased by 65 percent from 1962 to 1983, by 1985 an increase of about 90 percent compared with 1962 is anticipated. Of the total imports of the GDR (excluding transport by pipeline) 55 percent came by sea last year; this amount is to be increased by 1985 to 57.5 percent. In 1983 the Soviet fleet had 48 percent of bilateral transport by sea. In recent years container transportation has shown a particular upswing. Plans call for doubling it in 1984 over 1983.

With the protocol on opening direct relationships between the Ministry for Transportation of the GDR and the Ministry of Maritime Fleet of the USSR in the area of scientific-technical cooperation in 1968, the prerequisites for joint research work in the field of maritime trade were created. Since then, topics on rationalizing transportation and handling processes and improving economy, on management and organization and applied technology in the maritime trade economies of both countries have been discussed on the basis of protocols which are being concluded between the two ministries. The main emphasis is on treating topics whose results can be introduced into practical work over the short term with the greatest useful effect. A visible result of this scientific-technical cooperation is the adoption of Soviet experience to set up a computer-assisted control system for ships, means of transportation and foreign trade goods in transit through a harbor.

As a result of the policy of peaceful coexistence with states with differing social orders which the socialistic countries have consistently pursued and the further development of the economies of the socialist countries, the sea-based foreign trade of the GDR and the USSR with overseas capitalist countries and with the young nation states has grown. Combined with the dynamic expansion of mercantile trading fleets of both countries, this necessarily led to increased activity by the shipping companies of the GDR and the USSR on the international freight markets. Together with shipping companies from other socialist countries, the shipping companies of the GDR and the USSR consolidated their positions on the international markets at the end of the 1960's until the mid-1970's through the formation of common line services such as Baltamerica, Uniafrica and Unilevant. The activity of these common line services, which are also members of the corresponding line shipping conferences, has contributed substantially to the GDR's participation on an equal footing in international shipping.

The development of bilateral cooperation between the GDR and the USSR in maritime trade is naturally involved in the overall development of cooperation between all socialist countries within CEMA. The adoption of the program complex for the further solidification and perfection of cooperation and the development of the socialist economic integration of the member nations of CEMA in 1971 opened up a qualitatively new stage of cooperation between the CEMA countries in the field of merchant shipping. It was expressed in the signing of the treaty on cooperation in maritime shipping trade. On the basis of this multilateral agreement, a new merchant shipping treaty was signed in April 1973 between the Ministry for Transportation of the GDR and the Ministry of Maritime Fleet of the USSR, in which the principles and main directions of bilateral cooperation were determined for the long term. In accordance with the stipulations in this treaty, a longer term protocol was concluded between the responsible ministries in both countries, and, starting in 1976, for the particular 5-year in question a program to intensify and expand cooperation in the field of shipping, which is defined more exactly by annual work plans. These documents contain concrete stipulations on problems in the maritime shipping trade that must be solved jointly, both at the state and at the operating level.

In conjunction with the affirmation of the "program" or the work plans for the year, agreement is also reached on the base line for cooperation between the GDR and the USSR in both bilateral and international maritime trade. The emphasis has been on developing direct relationships between the combines and the factories.

The expanded application of modern transportation and handling technologies in merchant shipping between the two countries is a permanent task. The signing of a treaty in 1976 between the responsible ministries in both countries on the shipment of containers on a direct railroad-sea freight link between the GDR and the USSR was of special significance. The application of the new legal requirements concerning freight in accordance with this treaty has had a very positive effect on the development of transportation of containers by sea between the two countries.

On the basis of agreement at the appropriate ministerial level, successful cooperation in the area of merchant shipping can be noted with the Ministry of Internal Shipping of the RSFSR. In 1983, for example, about 10 percent of the GDR's total imports from the USSR was carried by Soviet seagoing inland waterway ships.

Cooperation in the field of merchant shipping between the two countries includes not only bilateral areas and the corresponding institutions in CEMA, but also the international shipping organizations, for example IMO [International Maritime Organization], the shipping committee of UNCTAD and INSA [International Shipowners Association]. Here, too, good results are indicated from cooperation, not only to the advantage of the GDR and the USSR, but for international shipping in general.

The successes in cooperation between the GDR and the USSR in merchant shipping, particularly in managing the constantly growing tasks in transportation between the two countries are primarily the result of the performance of the seamen and dockworkers involved on both sides. In this context, special importance also attaches to the activities of the FDJ members and the Lenin Komsomol as part of the youth initiative "Bridge of Peace," which celebrated its 10th year of existence this year. The young seamen and dockworkers of the shipping companies and ports involved in both countries contributed heavily to the speeding up, qualitative improvement and increase in the economic efficiency of bilateral transportation by sea through their joint initiatives to rationalize the processes of transportation and handling.

At this point the heartiest congratulations should be sent to the workers in Soviet shipping on the 60th anniversary of the merchant fleet of the USSR, and at the same time our thanks should be expressed for their cooperation thus far. True to the principles of socialist internationalism and peaceful coexistence, the merchant fleets of the GDR and the USSR will continue to steer a joint course for peace.

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GDR ANNOUNCES 200,000TH PATENT, LEADER IN FIELD

Recent Increase Detailed

East Berlin NATIONAL-ZEITUNG in German 26 Sep 84 p 5

[Text] In August of this year, the Inventions and Patent Office was able to record the 200,000th patent application from the GDR. The inventors expressed their determination to strengthen the GDR through their high achievements. Between 1981 and 1983, there were about just as many patent applications as during the period of the 1976-1980 five-year plan.

The development of the GDR into one of the leading industrial countries is most closely tied in with inventive creativity. In 1983, more than 10,000 invention patent applications were filed in the GDR for the first time. The centrally-managed industrial combines on the average achieved 9.5 patent applications per 100 college and technical school graduates. The performance increase possibilities which can still be tapped in this field likewise are pointed up by the state combines of ventilation and refrigeration engineering with 16.2, medical and laboratory equipment with 15.9, and the Buna Chemical Works with 15.7 patent applications per 100 college and technical school graduates.

Flood of Applications

The inventors are always busy with tasks which, during the particular time, most effectively advanced the country's economic buildup. During the early years of the reconstruction effort, it was the three-wheeled motor vehicle or the bicycle-sidecar, the fast paint application apparatus, or the heating cushion using glass wool, the steel holder for fast turning or fast milling, the method for making cord plumb bobs from hose or tape, the medication against lung tuberculosis, and the first dictating machine called "Robotron," the welding combine, the steam motor, the improved turret lathe, or the method for making synthetic pig iron. There were many solutions that accelerated the young state's buildup.

In September 1950, the People's Chamber adopted the patent law for the GDR. The introduction of industrial patents introduced the right of the socialist enterprises to the comprehensive use of inventions and the right of the inventors

to remuneration based on the social benefit. These promotion measures triggered a flood of inventive ideas so that the newly-established Inventions and Patent Office in 1950 and 1951 was able to record a large number of patent applications that has been attained again only in recent years.

#### High Benefits

Patent No. 1 has historical value; it deals with a "method for the simultaneous procurement of iron oxide pigments and titanium compounds"; and then there was the only industrial patent that was issued on 7 October 1949 for a "pin rod section." The inventor worked on the use of simplified mechanical means in place of the complicated spindle mechanism used in a textile machine, something which "leads not only to a performance increase but also reduces the cost of the machine and makes it possible to eliminate the annoying noise," it says in the patent.

Just how decisively the inventors helped shaped the GDR is illustrated best by such achievements as those of Rammner and Bilkenroth for the production of brown coal high-temperature coke from domestic brown coal; Mauersberger on the Malimo weaving technique; the "Lioflor" or "Liropol" textile machines; the offset printing machines; cold-shaping for roller bearings; the high-pressure fluid transport system; precision-jet flame cutting; the high-performance electron ray multichamber furnace; the distillation column for petroleum processing; or the invention to make use of waste heat, to save energy, up to the invention of microelectronics. Then as now, inventing means: speeding up scientific-technological progress, earning a high benefit for the national economy, strengthening the socialist state, and thus making a contribution toward a safer peace.

#### Team Work

The constantly closer cooperation of the GDR with the other CEMA member countries required regulations also in the field of inventor activity and patent law protection. An expression of this is the "agreement on legal protection for inventions, designs, utility models, and trademarks connected with economic and scientific-technological cooperation" which was signed on the government level of the CEMA countries in 1972.

The number of joint inventions rose from 64 applications in 1976 to 131 in 1983. It is especially cooperation in the chemical industry that produced numerous joint inventions, for example, in the field of polyurethane chemistry, polyamide silks, polyester fibers, as well as high-pressure polyethylene and in chemical plant construction, in various sectors of the machine-building industry and the electrical engineering and electronics industry. These joint inventions are an important contribution to strengthening the potential of the socialist countries and constitute an expression of combined efforts to raise the scientific-technological level.

Since 1978, 235 personalities were awarded the title "meritorious inventor" and many were given the national prize. Among the most outstanding inventors in the GDR we have, among other things, scientists and managers such as Prof. Dr. Siegfried Schiller of the "Manfred von Ardenne" Research Institute with 126 patent applications; Prof. Dr. Dietrich Demus of Martin-Luther University in Halle-Wittenberg, with the 100th patent application; Prof. Dr. Werner Gildé, director of the Central Institute of Welding Technology with 60 patent applications.

During the 1970's, many inventors were still unable to imagine that inventive tasks could be planned. The inventor looked for a task for himself, he developed inventions wherever he considered it possible or necessary. Good inventors developed a talent for tasks which they were able to solve through their inventiveness.

#### Spelled Out In Specifications

The generation of inventors growing up now knows that inventive tasks are spelled out in the specifications and feels that it is quite normal that something that was still unthinkable a few years ago and something that is still in its beginnings in some enterprises today: to fight to achieve more and more demanding patents and growing benefits through socialist competition.

The new patent law which was passed by the GDR People's Chamber in October 1983 spells out the basic tasks of the government agencies and the socialist enterprises as regards the development of inventive endeavor. They must challenge the creativity of the workers which is oriented toward inventions primarily through demanding scientific-technological tasks and they must create all conditions for comprehensive inventor activity with the best possible scientific-technological level.

#### Innovator Movement in State Economy

Annual benefit, including follow-up use, given in millions of Marks: 1970--2,456; 1975--3,534; 1980--4,516; 1983--5,277.

#### Background, Applications Discussed

East Berlin PRESSE-INFORMATIONEN in German No 103, 4 Sep 84 (supplement) pp 1, 11

[Text] In August of this year, the Inventions and Patent Office was able to register the 200,000th patent application from the GDR since the republic's founding. The inventors expressed their determination to strengthen the GDR through their high achievements. Between 1981 and 1983, almost just as many patent applications were filed as during the 1976-1980 five-year plan. The patents registered over the past 3 years yield an average of M940 million per year, whereas in 1976-1980 the figure was only M512 million per year. In 1965-1970, the benefit only came to M166 million per year.

The development of the GDR into one of the leading industrial countries is most closely tied in with inventive endeavor. In 1983, more than 10,000 invention patent applications were filed in the GDR for the first time. In the centrally-managed industrial combines, an average of 9.5 patent applications was achieved per 100 college and technical school graduates. The performance increase possibilities that can still be tapped in this field likewise are illustrated by the state combines for ventilation and refrigeration equipment with 16.7, medical and laboratory equipment with 15.9, and the Buna Chemical Works with 15.7 patent applications per 100 college and technical school graduates.

The inventors were always busy on tasks that, during the particular time, most effectively advanced the country's economic buildup. During the early years of the reconstruction effort, it was the three-wheeled motor vehicle or the bicycle sidecar, the fast paint apparatus or the heat cushion using glass wool, the steel holder for fast turning or fast milling, the method for making cord plumb bobs from hose or tape, the medication against lung tuberculosis, the first dictating machine called "Robotron," the welding combine, the steam motor, the improved turret lathe or the method for making synthetic pig iron. There were many solutions here that accelerated the young state's buildup.

Even before the establishment of the GDR, the German Economic Commission in September 1948 issued directives on the promotion of inventions and on the establishment of a patent, utility model, and trademark application agency in the Office of Inventions attached to the German Economic Commission. This means that the foundation had been laid for the development of inventor activities in the GDR and it was now possible to register inventions with the predecessor of the current Inventions and Patent Office.

The objective of these regulations was to promote the creative talents and abilities of the workers and to make inventions effective quickly. This basic concept was expressed in the 7 October 1949 GDR Constitution. Article 22 states that intellectual work, the right of authors, inventors, and artists are to enjoy the protection, promotion, and care of the republic.

#### First Patent Law

The People's Chamber adopted the GDR patent law in September 1950. The introduction of the industrial patent provided the right of the socialist enterprises to the comprehensive utilization of inventions and the right of the inventors for remuneration based on the social benefit. In an entire generation of inventors, this triggered a rethinking process above all among the intelligentsia that had come out of the capitalist enterprises. These promotion measures triggered a flood of inventive ideas so that the newly-established Inventions and Patent Office in 1950 and 1951 was able to register a large number of patent applications that was not reached again until recent years.

Patent No. 1 has historical value; it deals with a "method for the simultaneous procurement of iron oxide pigments and titanium compounds"; and then there is the only industrial patent which was granted on 7 October 1949 for a "pin rod section." The inventor worked on the use of simplified mechanical means in place of the complicated spindle mechanism used in a textile machine; this "not only leads to an output increase but also makes it possible to reduce the cost of the machine and to eliminate annoying noise," it says in the patent.

During all phases of the socialist buildup in the GDR, the party and the government devoted much attention to inventors, innovators, and rationalizers. After the second Party Conference of the SED in 1952 decided on the planned buildup of socialism in the GDR, the decree on the invention and proposal system in the state economy was issued in February 1953. The preamble of this decree states: "The rationalizer and inventor movement, which is being sustained by the working class in alliance with the creative intelligentsia, is one of the decisive forces in socialism's buildup."

Just how decisively the inventors helped shape the GDR is illustrated best by such inventions as those of Rammler and Bilkenroth for the production of brown coal high-temperature coke from domestic brown coal, of Mauersberger on the Malimo weaving technique; the "Lioflor" and "Liropol" textile machines; the offset printing machines, for example, the "Planeta-Variant"; cold-shaping for roller bearings; the high-pressure fluid transport system; precision-jet flame cutting; the high-performance electron ray multichamber furnace; the distillation columns for petroleum processing; or the invention to use waste heat, to save energy, all the way to the use of microelectronics. Then as now, inventing means: accelerating scientific-technological progress, earning a high benefit for the national economy, strengthening the socialist state and thus making a contribution toward a safer peace.

#### Internationally Demanded Solutions

The requirements for the inventor system grew along with socialism's continued buildup. This is why the GDR People's Chamber in July 1963 passed the law amending the patent law. This law, among other things, regulates the rights and duties of the enterprises, in order to provide patent protection for important inventions in other countries, so as to create favorable conditions for GDR export and license awards. In this way, the interest in the socialist state in rising, foreign-exchange-earning exports was tied in with the interest of the inventors who received remuneration or invention patent applications filed in other countries.

Through a growing number of creative internationally new achievements, the inventors during the following years confirmed their approval of this policy. Products from the GDR, with new and better utility properties, based on internationally new engineering solutions, are respected and in demand in more than 100 countries throughout the world.

The constantly closer cooperation of the GDR with the other CEMA member states required regulations also in the field of inventor activity and patent law protection. An expression of this is the "agreement on legal protection for inventions, designs, utility models, and trademarks connected with economic and scientific-technological cooperation" which was signed on the government level of the CEMA member countries in 1973.

The number of joint inventions rose from 64 applications in 1976 to 131 in 1983. It was especially cooperation in the chemical industry that led to

numerous joint inventions, for example, in the fields of polyurethane chemistry, polyamide silks, polyester fibers, as well as high-pressure polyethylene and in chemical plant construction, in various sectors of the machine-building industry and in the electrical engineering and electronics industry. These joint inventions are an important contribution to the strengthening of the economic potential of the socialist countries and they constitute an expression of combined efforts to raise the scientific-technological level.

#### New Upswing In Inventive Endeavor

In March 1978, the Council of Ministers adopted a resolution on the promotion of inventor activity which led to a great upswing in inventive endeavor. Initiatives were concentrated on the main points of scientific-technological progress through many different measures. The inclusion of inventor activity in socialist competition released certain reserves and effective material and moral stimulation essentially contributed to a considerable increase in their economic effectiveness. The benefit derived from inventions that were introduced rose to 230 percent in 1983 as compared to 1977. The number of inventors grew from 7,500 in 1977 to almost three times that figure by 1983.

The state created the most favorable conditions imaginable for the unfolding of their creative abilities. Since 1978, 235 personalities were awarded the title "meritorious inventor" and many got the national prize. Among the most outstanding inventors in the GDR we have, among others, scientists and leaders such as Prof. Dr. Siegfried Schiller of the "Manfred von Ardenne" Research Institute with 126 patent applications; Prof. Dr. Dietrich Demus of Martin-Luther University in Halle-Wittenberg with the 100th patent application; Prof. Dr. Werner Gilde, Director of the Central Institute of Welding Technology, with 60 patent applications. Outstanding inventor personalities also developed in the state enterprises and the institutes of the combines, such as Prof. Dr. Werner Kochmann, science and technology director in the Bitterfeld VEB Chemical Combine with 525 inventions; Prof. Horst Bendix, science and technology director in the S. M. Kirov Heavy Machine-Building VEB in Leipzig, with 42 inventions; Engineer Horst Bielig in the "Karl Liebknecht" Transformer Plant VEB in Berlin with 121 patent applications.

#### Youth Turning Toward Inventing

A tremendous reserve for inventive achievement can be found among the younger generation. The purpose of the youth inventor competition is to challenge and promote the younger generation much more; an appeal for that competition was issued in November 1982 in preparation of the GDR worker youth congress by "Young World" together with the presidium of the KDT [Chamber of Technology] and the Patent Office. The young people of the GDR are tackling this task with great eagerness and growing expert knowledge. The result of the first phase was 567 patent applications. During the second phase, the young people filed almost twice as many patent applications, that is, 1,028; that

phase extended all the way to the National Youth Festival. Many young people are already tinkering with new inventive solutions which they want to file during the third phase that will terminate at the end of April 1985.

Many young inventors emerged from the MMM [Fair of the Masters of Tomorrow] movement where they earned their spurs as apprentices and then became the movement's pacesetters. For example, Engineer Gerhard Zuber, of the Plauen Plamag VEB; Chemist Wolfgang Moeckel, of the Buna Chemical Works VEB combine just as during this year, Engineer Gerald Igel, of the "Hermann Matern" transformer and x-ray factory VEB, Hohen Neuendorf medical electronics division, were awarded the title "meritorious inventor" for their achievements which they completed by the age of 30. Inventor personalities also developed in the course of the inventor competition, such as Andrej Schleicher of the Wismar Engineering College, who participates in 28 patent applications; Winfried Schimmelpfennig of the Wilhelm-Pieck University in Rostock with 9 patent applications; Frank Ebert, of the Leipzig construction engineering school with 6 patents.

The young people are getting good support in solving demanding inventive tasks from the managers and those members of the KDT who already have inventing experience. They accept sponsorships or they organize inventor clubs. The KDT runs inventor schools, correspondence courses, and technical conferences devoted to the further development of motivation and an exchange of experiences in order quickly to generalize the best experiences.

#### Mastering Scientific Technological Progress

During the 1970's, many inventors were still unable to imagine that inventive tasks could be planned. The inventor looked for a task, he developed inventions wherever he considered it possible or necessary. Good inventors developed a talent for tasks which they were able to solve in an inventive manner.

The generation of inventors now growing up knows that inventive tasks are spelled out in the specifications and they consider as quite normal something that just a few years ago was still unthinkable and something that is still in its beginnings in some enterprises today: struggling for more and more demanding patents and growing benefit through socialist competition.

The basic principle of successful inventors is being grasped in an ever better fashion: do your research first, then you can invent! The young inventor generation makes reference to the patent literature in order to learn the latest in the field of technology worldwide, to derive goals from that, and to submit them to the manager for confirmation. Only he who knows the best can develop something internationally new, can help determine the level of technology and achieve top results. Many technical college, especially outstanding institute directors of the Karl-Marx-Stadt Technical College, in Ilmenau, Magdeburg, and others are sending their students to do patent research and are helping them get rid of their reluctance to delve into patents.

The number of persons using the patent information services of the combines and the Central Patent Library keeps growing. There has been an enormous increase in the requirement for information and, correspondingly, also in information output. This is proved by the rise in the lending of patents at the Inventions and Patent Office to a figure of 215 percent over the past 7 years and in published reports on patents which will rise from 67,000 in 1980 to about 226,000 in 1984.

The 1978 resolutions also introduced the award of academic degrees to meritorious inventors. So far, the Patent Office has been able to approve 23 nominations by general managers for the award of an academic degree based on many long years of successful and level-determining inventive work. It is an important task of the managers to make ever better use of these possibilities for stimulating high inventive achievements.

#### High-Level Inventions

The new patent law, which was passed by the GDR People's Chamber in October 1983, spells out the fundamental tasks of the government agencies and the socialist enterprises as regards the development of creative endeavor. They must challenge the creativity of the workers aimed at inventions above all through demanding scientific-technological tasks and they must create all conditions for comprehensive inventor activity with a high scientific-technological level.

This new patent law is in keeping with the conditions and requirements which are established for the creative work of the scientists, engineers, and innovators in the fashioning of the developed socialist society. It is aimed at comprehensively promoting the wealth of ideas and the spirit of invention in order--in the struggle for a high level of science and technology--to achieve a gain in tempo and further to improve the competitive capability of the country's products on the world markets.

Many new products, which the GDR industry showed at the 1984 Leipzig Autumn Fair, are based on important inventive solutions, for example, the textile machine with microelectronic control, the four-color sheet offset printing machine called "Planeta-Super-Varimat," the chemical plants, industrial robots, and sensors. In honor of the 35th anniversary, many teams of inventors have accepted obligations in terms of developing more inventions than had been planned and thus raising the level of science and technology faster and increasing their economic effectiveness further.

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CSO: 2300/55

## NYERS WRITES ON INEVITABILITY OF EVOLVING REFORM

Budapest TARSADALOM KUTATAS in Hungarian No 2, 1984 pp 5-11

/Article by Rezso Nyers, scientific advisor of the Academy of Economics: "The Macroeconomic Management System and Social Evolution in Hungary"/

/Text/ After being forced into the background for a decade, the topic--I can also call it the problem--of macroeconomic management has once again entered the limelight of our political thinking; once more we attach great importance to it from the viewpoint of social evolution. Is this surprising? I don't think it is. For Marxists it is evidence that society has evolutionary laws and that in the last analysis chance does not shape our destiny, although it is true that at present the evolutionary laws of a socialist or a transitional society are by no means adequately explored. The reappearance of the macroeconomic management problem from the depth of society is not surprising to someone who reasons in a creative Marxist spirit, because he sees and knows that there are weaknesses to be overcome in the current system of socialism and that there is a tremendous need for better development of the ideological virtues and possibilities. After achievement of the economic foundation of socialism, the social revolutionaries must turn their attention to social evolution and to the fact that if previously created institutions block the pathway of further evolution, then they must be able to implement courageous reforms on a socialist basis. Socialism can prove to be more capable of growth than capitalism in the long run only if, among other things, it expands its capacity to accommodate and carry out reforms in social activity.

We can conclude from contemporary political manifestations and from comparison and analysis of opinions that in our society an authentic majority emerged on the side of continuation and further development of the 1968 economic mechanism reform. Today, too, there are opponents who dislike the principle of personal interests and who commit themselves to and believe in disciplinary administrative measures instead of economic methods, but they form an obvious minority. Today there are also those who mistrust the modernness of one managerial method or another; there are those who stress a speedup of technical progress, while others emphasize market competitiveness, and still others incentives for workers or even correction of social inequalities. Over and beyond the unavoidable disagreements, however, political thinking points in a common direction: there is a need for substantial change and further reform measures in macroeconomic management. The indecisiveness which appeared in the 1970's has ended, and the fog which hindered clearheadedness in those days has lifted.

In what way is clearheadedness in Hungary substantially greater nowadays than it was 12 years ago?

In the first place, we now see that without expansion of market relations the central planning is unable to set in motion the driving forces of evolution so that a tendency toward external and internal equilibrium prevails, technical and market competitiveness improves, society's income increases adequately, and economic growth takes place along with an improvement in qualitative factors. The economic growth which upset the equilibrium between 1974 and 1978 is an instructive counterexample to the 1968 reform, because an attempt was made to achieve rapid growth by restriction and suppression of the market and the market mechanism, and this led to a poor result. It is possible to say that once again we acquired knowledge at our own expense.

In the second place, we now see that the global economic developments do not call into question the essence of the 1968 reform but rather strengthen it. The 1973 and 1979 oil price explosions, the substantial change in the structure of world trade and the fluctuation in its dynamics are inducing the Hungarian national economy to make a new type of accommodation, and today it is evident that competitiveness on foreign markets is impossible alongside underdevelopment of the domestic market and lack of authentic competition. It has also become clear that "we cannot flee" from the adversity of global economic conditions "into the embracing arms of CEMA," because the conditions unfavorable to us necessarily restrict cooperation with CEMA, and raising the question of "orientation toward CEMA or the world market" is not at all a real possibility. We must be able to promote CEMA cooperation in such a way that we can increase our participation in the world economy's division of labor; for our country there is no true alternative to the two-market foreign economy strategy.

In the third place, we now see that we cannot achieve the goal of a stepup in economic efficiency by delegating the decisionmaking power in production and investment matters to government agencies; after all, we unofficially reconcentrate a part of the decentralized powers, as happened in the mid-1970's. It has become obvious that the central planning and direction must influence and guide the economy's macrostructure; formation of the microstructure (product and enterprise investment structure) in the enterprise sphere of activity may be reasonable. The result can only be low efficiency if, in place of the enterprises, the state administrative agencies attempt to become involved in matters which the enterprise leadership alone is up-to-date on and can know well. Our socialist economic history reveals this lesson to us for the third time already; let us hope that now we finally learn it.

The lesson to be drawn from the foregoing three factors in the issue of macro-economic management is that what unambiguously follows from the developments of the 1970's is this: there is really no turning back for Hungarian economic policy, and the possibility of reverting to a Soviet macroeconomic management model is excluded; nor is the latter feasible even with careful corrections and "Hungarianization" of the system, only with disregard for efficiency and justification, which we cannot undertake, however. Nor can the counterargument be valid today--especially after the developments in Poland--that other socialist countries in the directive planning system are able to evolve similarly to

the way we do without general directives. What is a further possibility for another socialist country is no longer a possibility for us, either because of the dissimilarity of our economic situation or because of the special feature of political status or because of the numerous special characteristics of our social conditions.

An additional lesson of the last decade and a half is that there is a need to implement essential changes in the economic foundation--in the concrete production relations--and that an adequate change must take place in the political superstructure. The lasting effect of reforms in both directions requires a more practical interpretation of socialism's value system, a reconciliation of theory and practice.

It is hardly an exaggeration to assert that our national economy in the 1970's reached a new turning point in the 20th century economic history. We must exploit the changing resources differently than we have up until now, we must keep better pace with the transformation of the world economy, and we must satisfy other kinds of domestic needs, while there is greater dependence on market demand and scientific performances as well as the proper and lubricated operation of the mechanism of social cooperation than previously. The essence of the change: emphasis on quality. If, however, this is true for the economy, then we can certainly extend the thesis to the whole of society, especially since we do not know how to surmount growth problems by economic activity alone; an all-around improvement in social activity is necessary for that, in material as well as intellectual life, in management as well as implementation. In a parallel manner, it may very well be possible to solve four important and inter-linked tasks connected with society's growth: further development of the economic system; dynamic continuation of cultural progress; improvement of political and economic democracy under the new conditions; and improvement of complex social policy based on current and future social stratification. Obviously, we must see to it that all four processes advance at an adequate pace and reinforce each other, but unfortunately the rise of inequality and mutually restrictive influence cannot be excluded from the outset.

Continuation of the economic reform process follows two goals: it is related to the general buildup of socialism and to the solution of concrete economic tasks in the 2 decades before us. That is to day, through the reforms, we must continue to develop socialism as an economic system so that it becomes more competitive with the market economies of the capitalist system. Through the macroeconomic management to be reformed in 1985-86, however, we must bring about intensive economic growth in the 1980's and 1990's. All this means that we must be able to improve the central planning methods and the market mechanism starting from the principle that separately, in itself, one may not be perfect, but a combination of two proper ones can lead to the social optimum. It is desirable to place innovative intellectual work and highly-skilled physical work in the center of economic activity, much more so than up until now.

We must be able to shape and develop the multisector socialist economy, which is based on the decisive role of the state and cooperative sector, by stimulating personal activity in connection with small farms and by making our economic and legal institutions suitable for providing common tasks originating in the

multisector sphere. Over a wider and wider area we must be able to gradually suppress the deficiency market which is perhaps the most serious obstacle to increasing efficiency. Yet in the process of future economic growth we must reasonably and genuinely enlarge the material compensation for different performances and proportions. All these things can be attained if we evolve an adequate management system in all its complexity within 2-3 years and if we continue to create, in accordance with the system, a social practice within an additional few years; in this way we will be able to improve substantially the total performance of the economy.

But cultural development in the broad sense strengthens the human factor and the fundamental administrative condition for successful realization of economic goals. In this respect there is a multitude of things for us to do. Generally speaking, the task is to raise work culture to a higher level by updating professional training and by improving work organization and cooperation. Expeditious leadership which undertakes responsibility and knows how to gauge unavoidable risks does not spring into existence overnight; and improving and thriving cultural groundwork in addition to the force of circumstances is necessary for that. What is very essential is continued development of social information about the economy, from the leaders to the economic units and from the economic units to the leaders. The cultural task is deeper analysis and systematic performance of international comparisons and the development of an adequate social assessment of the lessons. A giant step for cultural growth is improvement of the educational system so that it is properly integrated with our economy's future conditions and probable situation. Of course, culture cannot be aimed simply and onesidedly at the economy, but it must be more closely linked with the economy than it is now.

The vital improvement of political and economic democracy is a prime need of socialist society--that is virtually a platitude--but at the same time there is well-understood interest from the viewpoint of improvement in economic efficiency which, however, is not at all self-evident to those who must or should share the decisionmaking right with others. The "protodemocracy" of the socialist revolutionary transformation--planned economy, predominance of public ownership, creation of people's power--is not in itself sufficient today and will be even less so in the future. Indirect assertion of the people's interest is unsatisfactory in many respects; in numerous matters of assertion of interest, it does not make an optimal solution possible. Genuine participation in actual decisions may be the leading idea of the socialist democracy of the future, either directly or through representative organizations. We must see to it that there is better elucidation of the interests of social strata in the substantially changed social structure, that there is a reduction of incidents in which interests are unclear, and that the interests of different social strata and the prevailing view in the strata about economic issues approach each other more closely. In the long run, the basic purpose of socialist democracy is to help us expand and improve social activity, to help us encourage and clear the way for positive social movements, and to see to it that many old-fashioned notions in society become visible, tangible and surmountable by political means.

It is proper to understand social policy not merely as a means of solving short-term social problems but as an institutional necessity in socialist society; its necessity derives from the fact that in society's stratification certain spontaneous tendencies inevitably continue to exist. They must be directed and restricted by a preventive exertion of influence, and the unfavorable phenomena must be counterbalanced by corrective activity.

At the moment and for the foreseeable future a social periphery exists in the socialist societies; recurrent and sometimes cumulative disadvantageous situations arise. It is important to know and see that all these inequalities are not the consequences of application of the economic efficiency principle, since their creation and their current expansiveness occur in a period when the economic efficiency principle is forced into the background. And yet it is indisputable that increased application of the efficiency principle does not reduce the outbreak of social problems; on the contrary, it most assuredly increases them. For this very reason, the buildup of a complex and coordinated sociopolitical system is necessary.

As a social effect, as a concomitant, so to speak, of the economic reform, the picture of society as conceived by socialists is inevitably undergoing a transformation. To all intents and purposes, this process has begun in Hungary, amidst numerous mixups and many obscure points. Accordingly, it can be said that the socialist picture of society is being redrawn. It would be stupid to regard this need for transformation and redrawing as a defeat for socialism, and it would be even more stupid to cling to what is fortunately a discredited socialist picture of society from an earlier period just to save face.

Today's reality and our new evolutionary conditions do not call into question the original and ultimate socialist principles, those which deal with the prevalence of socialist ownership, the end of class differences, the planned socialist economy, and the gradual attainment of social equality. But they do call into question our mechanistic interpretation of certain precepts (for example, the complete and universal abolishment of social differences) and the unaltered preservation--on principle--of particular and nongeneralizable solutions (for instance, consumer prices and services which are lower than their social value) from the original period of the socialist revolutionary transformation. Finally, they put a question mark beside those elements of our earlier picture of society which are connected with the premature insistence on a communistic social picture (disconnection of commodity money relations, application of the principle of gratuitousness for lack of an adequate material basis).

We must be able and dare to look these problems straight in the eye and impartially. Failure to unravel them could only result in situations filled with conflict.

A substantial change is involved if economic efficiency and technical progress enter the forefront of our social value system. It is true that for a long time we have used these ideas as economic categories. Nevertheless, the fact is that in social practice they have been subordinate to other concrete interests such as political stability or to the mechanically interpreted requirement for social equality. It is also true that we heavily underrated

the contradiction between the efficiency principle and efforts to achieve equality. The worker performing the unprofitable activity became and becomes the focus of the problem through no fault of his own. What should happen to him? Do we invariably guarantee his income and his given workplace, even though they are unprofitable for society? Or should we look for another solution on the basis of the efficiency principle? Today it is evident that we must seek a solution which does not harm the given workers' ultimate interests, while not resigning ourselves to lower efficiency, either. The issue of productive and economic structure emerges in a new way on the basis of the efficiency principle, since efficiency largely depends on the proportion of different activities compared with each other. What should happen to the enterprises whose performance is judged by the world market or even the domestic market to be lower than the social average? On the basis of the efficiency principle, we must hereafter tackle these questions differently from the way we have up until now. All this calls for a thorough ideological change and more consistent social practice, in short, a reform in mentality, management and action.

It is invariably true that a socialist society's economy and its development can be planned, and it will remain that way in the future. It is not true that all economic activity, or even the trend of all economic activity, can be planned from one central office. While the central plan which is formed in the light of the market directs the total economic process, in the meantime the enterprises' plans are to a growing extent reacting strongly to market influences. Realistically we must note that certain qualitative elements and factors of the economy can be planned only to a limited degree; their development depends to a greater extent on correct practical activity than on compliance with certain plan regulations. Therefore the social interest in our concept inevitably merges with the centrally plannable social interest and the social value recognition which becomes comprehensive and which takes shape and arises from practical activity. In our concept of the national economy and in the picture we have formed of the national economy, the great economic spheres, such as administration of public revenue, enterprise management and consumer budgets, will be more separate from each other than previously and even current'y. Yet all this is the result of the fact that the sharing of the economy's advantages and disadvantages, revenues and liabilities among the three spheres is becoming the important question and topic of debate in economic policy. In connection with the development of economic democracy, however, the conflicts of interest and the differences of viewpoint are becoming explicit; they emerge as public problems and require a political solution. All this calls for changes in society's financial and statistical system as well as in the social mechanism for harmonization of interests. Still further differences must be taken into account from the viewpoint of macroeconomic management, for example, the differences among the so-called public enterprises, the nonprofit undertakings, and the companies in the competitive sphere. In this sense, the socialist economy takes on the appearance of a peculiar mixed economy.

The question which has been emerging for a long time in our picture of socialist society is what effects the peaceful coexistence of capitalist and socialist states will have on socialist economic policy and economic practice. The fundamental dilemma is something like this: should we undertake continuous

economic relations with the capitalist world and direct commensurate competition in social interests, or should we run our economies in increasing isolation in a closed socialist sphere and only indirectly compete with the capitalist world? While economic contact in every socialist country had followed the variant mentioned first, up until then the second one continued to exist in ideology and in the picture of society; indeed, from time to time it still picks up new strength. In connection with this, a concept which can be called mechanical took shape that socialism has become a world system, and according to it the socialist world economic system is now developing on a completely autotelic basis; it is assuming the shape of an independent world system economically as well. However, this mechanical concept does not prove to be true in practice. It is indisputable that socialism in the political sense has become a world system; it is also unquestionable that the economy of the socialist countries is equivalent to a separate zone of the world economy. However, the concept does not prove correct that this region would operate and evolve in complete accordance with its own laws; in short, the world market would divide into one capitalist and one socialist world market. The situation and evolution of the socialist national economies show that each one in differing degrees has contact with the nonsocialist world market and will do so in the future, too. That is to say, the dilemma referred to above can only be solved on the basis of the variant mentioned first, no matter how difficult it seems in a given period. For Hungary, in any case, it is evident that it can build its outside economic relations on parallel cooperation with the world market and the CEMA market.

The solution to new problems in economic reforms and social evolution inevitably requires the further theoretical development of Marxism. As was emphasized at the 20th Congress of the Communist Party of the Soviet Union, we must transcend the extravagantly declarative and deductive nature of Marxist theory, i.e., in the last analysis, over and beyond the immutability of earlier theoretical precepts, we should try to arrive at new theoretical conclusions, in this way pretty much restricting the intellectual process of theoretical generalization which derives from practical life and progress. In our present era of change, when the multitude of new phenomena requires a new type of theoretical approach, a Marxist theory based to a larger degree on inductive methods must be developed, in contrast to the inordinately deductive Marxism. From this standpoint, repeated recognition of Hungarian reality and its theoretical generalization are important for us and above all for Hungarian Marxists. It does not follow from all this that we should limit Marxism to a national world of phenomena or to the formation of some kind of theory of "national Marxism." Marxism is an international force, but it is also true that this internationalism stands for a theory and a philosophical system which are built from a multitude of national realities. In this sense, the national problem and the continued development of an internationally valid theory of scientific socialism are closely interlinked.

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FIGYELO EDITOR TOUTS ECONOMIC REFORM AT WARSAW SEMINAR

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[Edited version of a paper and address delivered by Jozsef Garam, editor-in-chief of FIGYELO, at a seminar on "The Evolution of the Economic Planning and Management Systems of the Socialist Countries" held in Warsaw, 16-18 May 1984]

[Text] In the article published below, the editor-in-chief of the weekly publication FIGYELO discusses experiences from the Hungarian economic reform and the long-range prospects for its further development. These matters were discussed at a seminar on the evolution of the system of planning and management in socialist countries, which our editorial office sponsored this past May. The material published here is a compilation from an address which the author presented at the seminar and his further remarks during the discussion that ensued.

The system and methods of planning and managing the Hungarian economy came into being 50 years after socialist production relations had become fixed. As in other countries of Eastern Europe, this happened on the basis of Soviet experience. Soviet practice in the realm of economic planning and the theory underlying it were substantially the result of the laws and consequences of the socialist economy. An example of such laws and conditions is the fact that under the conditions of socialist ownership of the means of production, the development of the national economy not only can but should be directed in a conscious, planned way. Another example: the only basis for conducting a planned economy possible is the socioeconomic plan centrally created by the state, and it would be multilaterally inspired and drafted in keeping with a uniform system. Still another example is the notion that the plan can only be implemented through conscious, centrally directed activity on the part of the society.

Nonetheless, the fact that the plan is compulsory does not necessarily mean it has to be broken down into targets for various enterprises included in the system of specialized indicators. We think that the central authority is in a better position to control the economy without the imposition of the detailed indicators, focusing its attention instead on major issues. Compulsory indicators for enterprises are ineffective for both practical and theoretical reasons.

The theoretical problems boil down to the sort of detail that should be aimed for in drawing up the indicators. When do we reach the limit of where the central authority can have all the necessary information to make correct decisions? It would also be better to give up having detailed directive indicators too, because in economic life economic incentives prove more effective as a means of management. Therefore, it is necessary to create those conditions in which it is in the employee's interest to assist in attaining the goals of the central plan.

Practical experience has shown that in Hungary the results achieved were never closer to the plan's goals than in 1968-1973, when for the first time the enterprises stopped being bound by any directive indicators. The well-known successes of Hungarian agriculture are also related to the fact that the producer cooperatives were given the greatest independence. Prior to 1968 the Hungarians had to import wheat and meat, but they still always had a shortage. Now, however, Hungary is exporting both wheat and meat. I have cited the example of agriculture here, in order to show the advisability of giving independence to the enterprises, but we could also give a number of negative examples to show how harmful it is to deprive the enterprises of this independence.

The independence of the enterprises in Hungary contributed to a great extent to adapting supply to the needs of the society. The enterprises found many possibilities for adapting production to the needs of potential buyers, and because of their initiative the assortment of goods expanded.

#### The Plan and the Market

The way the economic reform mechanism introduced in 1963 is usually explained, indirect economic incentives began to replace direct methods of a planned economy. The most characteristic consequence of the change is the fact that the reform eliminated compulsory description of the national socioeconomic plan broken down by ministry and enterprise. In this way the economic management system lost a substantial share of direct means of administration. Instead there was created a harmonious coordinated system of economic standards, which for those taking part in economic life -- this means above all the firms and cooperatives -- became incentives to the sort of operation which would lead to actually meeting the targets of the national socioeconomic plan.

With the maintenance and bolstering of the components and principles implied by the socialist system of operation, this organically tied the determining function of economic planning to the objectively existing cash-commodity relationships and a more active utilization of the market.

The reform created a system of economic management in which the plan on the one hand, and the market, law of value, and other commodity production categories (cash-commodity relationships) exert their influence not in an antagonistic or mutually exclusive way but as part of a homogeneous system.

The socioeconomic plan's regulatory influence is comprehensive. The market (domestic market) is a regulated market controlled by the socioeconomic plan and in this way plays the role of regulator with regard to economic units. The plans of the various economic units and their real economic activity is regulated by the socioeconomic plan, in part directly (through concrete decisions) and in part indirectly (through the market). The market also serves a control function. Its requirements and influences, and the consequences of the operation of economic standards, are taken into account in the course of the creation of the national socioeconomic plan.

The development of such a system of administration has been a complicated system full of contradictions. In the few years since the implementation of the reform, its progress has been hampered. At many points we were dealing with a departure from reform principles and with back-sliding. The operating style of state administrative units took a certain length of time to adapt to the new requirements. The economic organizational system hardly developed at all. Economic cooperation among CEMA countries and the balance of payments did not provide any major possibility of expanding imports. As a result the domestic market did not contain suitable conditions for the development of cooperation. The realm of free action on the part of economic organizations did not develop as desired, and the economic motivations and incentives needed to expand the effectiveness of their operations were absent.

Beginning at the end of the 1970's there were redoubled efforts to eliminate the distortions that had appeared in the system of economic administration. The organizational system of administration and the enterprises was developed, and we began to create a system of economic standards with higher incentives. Nonetheless, the successive decline in the world economic situation from 1982 on brought renewed temporary increases in direct intervention from authoritative bodies in short-term economic processes and in economic activity.

In order to interest the enterprises in profits as the major incentive for their operations and to make the market work, price reform was essential. When prices are incorrect, we get lost and do not see the economic processes clearly. Initially we tried to introduce prices to reflect the enterprises' real costs. Then we began to shift to so-called "world market" prices. This proved essential, because a country as small as Hungary must attach great importance to foreign trade, and the international market simply did not provide the possibility of getting those prices we would consider justified in view of the enterprises' costs. As a footnote, let me say that in upgrading the price system we devoted a great deal of attention to the theoretical work of Soviet economist, and I would like to point out here a marvelous book by Novozhylov (*Efektivnost' srazat i rezultatov*). We are gradually getting closer to the situation in which enterprises export at prices that cover their costs, which means that the state budget is giving them more and more help. This also makes it possible to track real economic processes.

The price system's favorable influence is demonstrated, for example, by the fact that in 1971, 1972, and 1973 we achieved a very high foreign trade balance with socialist countries, as well as a balance in the black, though to a lesser extent, in trade with capitalist countries. Later, unfortunately, as everyone knows, there was a substantial increase in major raw materials prices on the world market. Consequently our balance-of-payments situation suddenly worsened.

Now let us take a closer look at the basic elements of the Hungarian system of management and administration and at the way its instruments are arrayed.

Plan. The content of socioeconomic plans is twofold in nature:

a) the goals of economic policy pertaining to the development of social relations, the rate of economic development and its major directions, the shaping of economic balance and effectiveness, the structuring of economic development and the population's standard of living, and also the basic social, economic, and technicoeconomic tasks by which the above-mentioned concepts are described;

b) the guidelines, numerical parameters regulating the application of the major instruments of an economic nature that serve as a basis for carrying out plan targets are included, along with other decisions and moves.

Our system of administration also uses indirect economic instruments and direct state decisions:

a) Indirect economic instruments are those implied by the national socioeconomic plan, the conditions which on the one hand influence and direct the shaping of market conditions and on the other direct the material incentives of the economic units, so that under the conditions of a controlled market they provide encouragement for rational, effective operations in keeping with the public interest as defined in the national socioeconomic plan;

b) Indirect state decisions define certain economic tasks and are compulsory for the executing apparatus.

In the sphere of production, the operation of indirect instruments is common. They have an impact on the conditions of all economic organizations' operations. They provide the plane for orientation and incentives for them. Direct state decisions in the production sphere are largely individual in nature and apply only to certain economic units. (The nonproduction sphere develops mainly in keeping with central and local state decisions).

The concept of directing or running the economy also includes within it the organization of the economy. The organization of the economy designates the distribution of labor among the various state units directing the economy and the organization of economic units (enterprises, and so on). The organization of the economy should of course correspond to the system of running the economy, including the system of drawing up the socioeconomic plans. In this aspect, much still remains to be done in the Hungarian system of running the economy.

Market. In our socialist economy, the market is the major participant in the economic processes. It is the sum of cash-commodity ties between producers, distributors, consumers, buyers, and sellers.

The planned running of the economy also involves active use of the market. In a conscious way, therefore, our system of management regulates market factors.

The active exploitation of market relations

a) encompasses the development of the socialist domestic market, the activation of its mechanisms. This assumes the economic units (enterprises) are free in the realm of production and partially free in the realm of decisions concerning development, within the framework of social ownership of the means of production; the material interest of the economic units and their employees in improving economic results, through incentives; the possibility of competition among economic units under conditions of a regulated domestic market;

b) this also takes into account the fact that the Hungarian national economy is interested in increasing our share in the international division of labor. The operating conditions of the economic units working in the sphere of production and turnover are structured so that their situation and the results they achieve can be linked to the changes occurring on foreign markets and so that they are interested in expanding the international division of labor.

The development of the planned economy in Hungary over the past 25 years has been based increasingly on the market and on market relations. Development has demonstrated that commodity production means production for the market and that in the course of planning it is also necessary to take changes in the market and its requirements into account at the macro level too. The market, especially the foreign market, also exerts such an influence on an open economy, that is, one like the Hungarian economy, and with certain social considerations in view we should protect economic elements and owners of income from this influence. The state must make a choice among various sorts of market influences and, taking into account the requirements for equilibrium, the state should decide the scope and manner of these influences.

The most important problem of the state's economic operation is working out what economic processes it intends to carry out through its own concrete decisions and the initiatives of economic organizations which are to remain under the influence of indirect economic instruments determining the conditions for material incentives.

In the sphere of production, direct state decisions apply mainly to expanding the process of reproduction, development. Changes in the economy, including major expansion of the production structures, are based on individual state decisions, but the directions of the major structural changes are defined in the national socioeconomic plan. On the other hand, the state sees that they are carried out by using instruments to guide the economy in such a way that the state conducts economic activity that has special importance, encompassing the development of production structures. In its overall outlines, enterprise activity must correspond to the goals of the national socioeconomic

plan. This coordination is assured through economic regulators, but our planning system does not have the goal of mechanically correlating plans at various levels.

### Supervision System

The control system is an organic part of the system of planning and running the economy. This control operates within a state and social framework in Hungary.

State control is aimed at seeing that legal principles and norms contained in party and state decisions are followed and that the goals and requirements formulated in this way are also carried out.

State administrative control at the highest level falls within the jurisdiction of the Council of Ministers. Within the framework of the control activity of the state administration, government supervision plays an important role. The bodies administering and issuing the regulations have government authority and successively oversee the adherence to legal regulations. Specialized control bodies of the people's councils participate in this control activity alongside the central bodies of the state administration, the ministries, and top bodies of state authority.

Within the framework of government supervision, the economic-financial control bodies of the economic units are of special significance. This sort of supervision is directed mainly at controlling the propriety of balance-sheets and settlement of accounts with the budget, along with seeing that the legal regulations that apply to economic activity are followed. Today this control extends beyond ordinary financial audits. It is increasingly taking on the economic content, supplying information useful in running the economy.

Oversight commissions play an important role in supervising enterprises' activity. General comprehensive assessment of the activity of the enterprises, assessment of their operations, and the pointing out of directions for economic activity fall within their jurisdiction. Functional administrative bodies participate in commission work, along with colleagues working in financial institutions and outside consultants.

Social control is playing an ever greater role in the state system of supervision. Social control is a state control body with universal jurisdiction encompassing just about all areas of socioeconomic life. Tasks related to social control are performed by commissions that can be recalled. They are selected by the council of the presidium and the people's councils, and the broad ranks of society are involved. Social controllers exercise control within the framework of volunteer social work.

Relations among the economic units are largely trade relations. The fact that the market is regulated means on the one hand that means are created to displace market influences, and on the other hand that barriers and conditions essential for the national economy, for the society to be able to bear market influences, are created.

Bonds between the economic organizations and the state are regulated on many levels. The optimal fulfillment of two goals is the aim of the economic leadership. They are: to see that net income created in the economic organizations is contributed to the extent -- only to the extent -- that is absolutely necessary to finance central tasks and at the same time to see that there are means available to provide incentives for achieving better results and for serving developmental goals, upon which further improvement in economic results depends.

## Errors

Now I will talk about the major errors we made in the realm of improving the system of running the economy. First of all we feared the effects of the projected changes. For this reason back in 1968 we did not take those steps provided for in the 1966 party resolution. For example, we were afraid that when the enterprises no longer operated according to the central plan indicators but to achieve profits, this would lead to unemployment. So back at the beginning we limited the enterprises' freedom and independence in the realm of wage policy. We are still feeling the results of this mistake at the present. Another error was that we were too late in noticing that a rise in the prices of major raw materials is irreversible. The third mistake was that in the 1970's it was too easy to get credit on the world market, and along with this we incurred a high level of indebtedness. It is very likely that not only my grandchild but also the grandchild of my grandchild will pay off this debt. On the other hand, it must be added that in the Hungarian system of directing the economy there are still great possibilities, as the improved balance of payments shows. The foreign trade deficit in 1977-1978 exceeded a billion dollars, but in recent years we have made it to 500 million dollars in the black. Although things are going slowly, we have begun to repay our debts (but I am not taking back what I said about my grandchildren).

Another mistake we should recognize is the fact that we wanted to introduce the reform without developing the economy's institutional system. We kept the same institutions which had existed under the system of direct directives. We also maintained the system of having the ministries name the directors of the enterprises. Hungary also has too many large enterprises which have kept monopolistic positions, that is, a single producer for certain products. This system has made it possible for such firms to continue to do everything the old, convenient way and to sell at prices they considered profitable.

The final mistake is that under the financing system presently being used, it is the enterprises that work well that feed the state budget out of their profits. This money is used to finance the operations of enterprises which are not running well, the ones that do not know how to make a profit, the ones operating at a loss. In working out the principles of the reform, we overlooked the fact that there can be enterprises whose production the society does not have to have, and because of this we should have created institutional forms to eliminate such enterprises.

## Long-Range Prospects for Development

It was these errors that led to the call for a meeting of the Hungarian party's central committee this past 17 April, at which it was decided to continue to expand the enterprises' independence and bolster entrepreneurship and ingenuity. Competition on the domestic market should be increased to force them constantly to be on the look-out for possibilities of improving their operations. This is why it is considered useful to increase the number of small- and medium-sized firms. This will also bolster the position of the largest enterprises, because they will have the possibility of choosing their suppliers.

The directions set for developing the system of running the economy include changes in the tax system. They will be aimed at discontinuing the financing of operations of inept enterprises through government subsidies or contributions of well-run enterprises. We also wanted to permit the flow of funds between enterprises in the case of smaller undertakings. If one enterprise has funds but does not happen to have a demand for its goods, then it should have the possibility of investing its funds in another enterprise to insure a share in its profits.

The plenums' decisions do not mean that we think the process of improving the economic system has come to an end. In Hungary we think that the system is good when it is adapted to the given country's needs at a given time. For all countries at all times there can be no single formula. There must be continual work and efforts to improve the system of running the economy. The only universal formula which must be recognized everywhere is to inspire the people's interest in their work.

In order to improve the conditions of enterprise operations we in Hungary are aiming first of all at expanding the methods of management, at modernizing and expanding the means of economic regulation, and of changing the jurisdiction of the bodies charged with managing the economy, to that end.

We must also create economic (market) conditions in which economic organizations will expand their competitive stance and improve their operating effectiveness in keeping with their own interests, rather than reacting to external administrative pressure.

For this reason we can see two basic groups of tasks in the system of economic standards and the organizational-institutional system:

a) Compared to the present condition, we should make the enterprises more independent in their decisions and expand their field of economic operation, and the management staff and workers of the enterprises should bear the consequences of any adverse results of decisions made by the plants. The conditions created by central leadership, or rather by the regulated market mechanisms created by them, would become the framework of the enterprises' independence and would operate more forcefully than they do now.

b) We should bolster employee and management interest in increasing their income, or, to put it in other words, we should support an increase in the enterprises' assets and a rise in their incomes, because this makes it possible to expand the incentive system. There is also a need to expand employee's role in structuring the enterprises' economic activity. To this end we should reduce the economic units' management's hierarchical and existential dependence on the bodies running the economy, and we should also increase their reliance on economic effects and the staff management's responsibility and accountability to the employee collective. Conditions for independent management should also be created within the plants and should stimulate the independence of the various organizational groups of the enterprises. This operation should be based on modernization of the internal organizational mechanism of the plants.

c) There is a need to create such a situation in which higher income actually obtained through entirely legal means, from greater effectiveness, is accepted by the population. We should see that there is a direct link between effects and income as a feature at all levels and on all planes of life in the plants (management, organizational units, employees). Conditions must also be created under which there will be differentiation among enterprises.

d) Within the framework of wage and income policy, in order to gain social acceptance for a more differentiated wage policy, we should also create the possibilities provided by the mechanism to ease conflicts of interest.

e) The active role of the regulated market should continue to be bolstered. In order to facilitate mobility of the labor force and means of production necessary for changes in the economy's structure, it is necessary to change, that is, expand, the organizational auspices for the free flow of these means, and this also applies to finances.

f) We should expand the organizational-institutional system of the economy. Here we should provide conditions so that the large, small, and medium-sized enterprises can operate in healthy structures. The jurisdiction of bodies administering the enterprises' work should be revised, and in conjunction with this, rules for managing the enterprises and selecting management personnel should be formulated to create that type of enterprise in which there is the possibility of having the collective participate in management.

The changes proposed in management of the economy do not nullify the methods that have already been verified, but we can at the same time change those ways which have not stood the test of time. It is therefore possible here to create methods which, while maintaining the basic principles of the reform as adopted in 1966, taken altogether will create more favorable conditions and more effective means for implementing the targets of economic policy.

How the organization of the enterprises looks and how it reacts to the various advances in the standards system are a very important matter from the viewpoint of the effectiveness of the economic reform. Past experience has shown that the large enterprises and trusts created in an artificial way over a long period of time can hide their interior organizational weaknesses by

alterations in domestic prices and make shifts in the influences of various groups of workers, from those groups which operate with greater efficiency to those groups which are weaker. This is why there should be a revision in the organizational structures of large plants. Where this proves necessary from the viewpoint of more effective modern labor organization and effectiveness, decentralization measures must be implemented.

One should not make the enterprises' organizational structures uniform, according to our experience. In connection with this, for the system of standards we should use the most important requirement, which boils down to making it possible to introduce natural, justified changes.

But at least equally important is the internal organizational structure and mechanism of the enterprises. Practice has shown that enterprises' activity produces far better results where their organizational units: factories, plants, and so on, are materially interested and have a certain sphere of independence.

10790

CSO: 2600/1203

## STATISTICAL OFFICE RANKS TOP 100 ENTERPRISES

Budapest FIGYELO in Hungarian 13 Sep 84 p 3

[Text] In the world's economic publications, autumn is the season of the so-called top lists. By the end of summer, the final financial statements for the preceding year are available everywhere in the world. On their basis it is then possible to determine which were the largest enterprises of a given country or continent the preceding year, the changes in how they rank, and whether there is any change in which enterprises are included in the top lists.

In cooperation with the Central Statistical Office, FIGYELO is publishing also this year the list of Hungary's top 100 enterprises. The attached list shows also the changes in the Club of 100's membership, and in the members' positions.

		List of Trusts		Rank by 1983			
Rank by output value		Name of trust	Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales	
83	82						
1	1	National Petroleum & Gas Industry Trust (Orszagos Koolaj es Gazipari Troszt)	2	2	2	1	
2	2	Hungarian Power Plants Trust (Magyar Villamosmuvek Troszt)	1	1	8	2	
3	3	Livestock Trading & Meat Industry Trust (Allatforgalmi es Husipari Troszt)	3	5	1	3	
4	4	Grain Trust (Gabona Troszt)	5	4	7	4	
5	5	Hungarian Aluminum Industry Trust (Magyar Aluminiumipari Troszt)	6	3	3	6	
6	6	Dairy Industry Enterprises Trust (Tejipari Vallalatok Trosztje)	7	8	5	5	
7	8	Farm & Food-Industry Machine Building and Service Enterprises Trust (Mezogazdasagi & Elelmiszeripari Gepgyarto es Szolgaltato Vallalatok Trosztje)	4	7	4	8	
8	9	Distilleries Trust (Szeszipari Vallalatok Trosztje)	9	9	6	7	
9	10	Brick & Tile Industry Trust (Tegla- es Cserepipari Troszt)	8	6	9	9	

# List of Enterprises

Rank by output value		Name of enterprise	Rank by 1983			
83	82		Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales
1	1	Danube Petroleum Industry Enterprise (Dunai Koolajipari Vallalat)	.	8	3	1
2	2	Great Alfold Petroleum & Natural Gas Ent. (Nagyalfoldi Koolaj- es Foldgaztermelo Vallalat)	90	13	61	2
3	4	Hungarian Railroad Car & Machine Factory (Magyar Vagon- es Gepgyar; Raba)	2	4	2	19
4	6	Ikarus Body and Vehicle Factory (Ikarus Karosszeria- es Jarmugyar)	14	48	1	.
5	3	Tisza Petroleum Industry Enterprise (Tiszai Koolajipari Vallalat; TIFO)	.	25	64	3
6	5	Tisza Chemical Combine (Tiszai Vegyi Kombinat)	33	6	8	7
7	7	Danube Iron Works (Dunai Vasmu)	12	2	17	4
8	8	Paper Industry Enterprise (Papiripari Vallalat)	9	7	59	5
9	9	Lenin Metallurgical Works (Lenin Kohaszati Muvek)	5	3	20	9
10	10	Ozd Metallurgical Works (Ozdi Kohaszati Uzemek; OKU)	8	17	13	13
11	11	Videoton Electronics Enterprise (Videoton Elektronikai Vallalat)	3	43	4	45
12	12	Csepel Automobile Factory (Csepel Autogyar)	17	41	49	10
13	14	Borsod Chemical Combine (Borsodi Vegyi Kombinat)	26	9	23	16
14	13	Vegetable Oil Industry & Detergent Pro- ducing Enterprise (Novenyolajipari es Mososzergyarto Vallalat)	.	49	10	21
15	18	Taurus Rubber Industry Enterprise (Taurus Gumiipari Vallalat)	15	34	11	35
16	16	Budapest Municipal Gas Works (Fovarosi Gazmuvek)	.	30	.	12
17	20	Komarom Petroleum Industry Enterprise (Komaromi Koolajipari Vallalat)	.	63	36	18
18	17	Danube Thermal Power Plant Enterprise (Dunamenti Hokeromu Vallalat)	.	12	.	14
19	34	Headquarters of Hung. Power Plants Trust (Magyar Villamosmuvek Troszt Kozpont)	.	.	.	15
20	19	Szekesfehervar Light Metal Works (Szekesfehervari Konnyufemu)	67	18	22	25

List of Enterprises (continued)

Rank by output value		Name of enterprise	R a n k b y 1 9 8 3			
81	82		Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales
21	21	Kobanya Pharmaceutical Factory (Kobanyai Gyogyszerarugyar)	36	36	5	.
22	15	Tungaram	1	22	6	.
23	22	Cement and Lime Works (Cement es Meszmuvek)	24	1	.	32
24	25	Tisza Power Plant Enterprise (Tiszai Eromu Vallalat)	.	15	.	17
25	32	Chinoiin Pharmaceuticals & Chemicals Fac- tory, Ltd (Chinoiin Gyogyszer es Vegy- eszeti Termek Gyara, Rt)	49	59	7	.
26	29	Transtisza Gas Distribution Enterprise (Tizsantuli Gasszolgaltato Vallalat, TIGAZ)	95	57	.	20
27	28	Glass Industry Works (Uvegipari Muvek)	6	26	52	29
28	24	Pet Nitrogen Works (Peti Nitrogen Muvek)	66	11	15	46
29	23	Csepel Works Metalworking Plant (Csepel Muvek Femmu)	.	46	71	30
30	35	Nitrochemical Industrial Plants (Nitrokemia Ipartelepek)	50	50	41	33
31	27	Ganz-Mavag Locomotive, Railroad Car & Machine Factory (Ganz-Mavag Mozdony-, Vagon- es Gepgyar)	11	21	32	43
32	26	Petroleum and Natural Gas Producing Ent. (Koolaj & Foldgazbanyaszati Vallalat; KVV)	53	32	.	24
33	30	Joint Enterprise for the Concentration of Metallurgical Raw Materials (Kohaszati Alapanyagelokeszito Kozos Vallalat)	89	87	.	26
34	33	Budapest Meat Industry Enterprise (Budapesti Husipari Vallalat)	80	.	44	42
35	31	Hungarian Cable Works (Magyar Kabel Muvek)	84	51	43	39
36	37	Csepel Works Iron & Steel Mill (Csepel Muvek Vasmu)	75	45	72	38
37	39	Tatabanya Coal Mines (Tatabanyai Szebanyak)	10	23	.	36
38	38	Hungarian Shipyard and Crane Factory (Magyar Hajo- es Darugyar)	21	53	9	.
39	40	Szeged Salami Factory & Meat Combine (Szegedi Szalamigyar es Huskobinat; PICK)	.	.	25	67
40	36	Budapest Confectionery Enterprise (Budapest Edesipari Vallalat)	.	.	.	34

## List of Enterprises (continued)

Rank by output value	83	82	Name of enterprise	Rank by 1983			
				Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales
41	50		Ajka Alumina & Aluminum Factory (Ajakai Tímfoldgyár és Alumíniumkőbő)	.	38	12	.
42	45		United Pharmaceutical & Chemical Factory (Egyesült Gyógyszervegyészeti Gyar)	72	56	14	.
43	49		Gyula Meat Combine (Gyulai Huskombinat)	.	.	29	79
44	41		Borsod Coal Mines (Borsodi Szénbányák)	4	35	.	37
45	43		Compack Commercial Packaging Enterprise (Compack Kereskedelmi Csomagoló Vállalat)	.	.	.	40
46	48		Diosgyor Machine Factory (Diosgyori Gépgyár; DIGEP)	20	60	16	.
47	42		Budaprint Cotton Printing Industry Ent. (Budaprint Pámtnyomóipari Vállalat)	13	40	39	61
48	54		Papa Meat Combine (Papai Huskombinat)	.	.	27	100
49	51		Medicor Works (Medicor Művek)	19	90	18	.
50	46		Mecsek Coal Mines (Mecseki Szénbányák)	7	24	.	44
51	44		Gagarin Thermal Power Plant Enterprise (Gagarin Hőerőmű Vállalat)	.	16	.	41
52	55		Gyor-Sopron Megye Livestock Trading and Meat Industry Ent. (Gyor-Sopron Megyei Allatforgalmi és Husipari Vállalat)	.	.	37	92
53	47		Salgotarjan Metallurgical Works (Salgotarjani Kohászati Üzemek)	76	86	98	51
54	52		Tisza Chemical Works (Tisza menti Vegyiművek)	.	73	.	50
55	56		Zala Petroleum Industry Enterprise (Zalai Kőolajipari Vállalat)	.	.	58	62
56	57		Concrete & Reinforced-Concrete Ind. Works (Beton- és Vasbetonipari Művek)	28	54	.	47
57	59		Budapest Dairy Industry Enterprise (Budapesti Tejipari Vállalat)	.	.	.	70
58	53		Refrigeration Equipment Factory (Hűtőgépgyár)	39	82	33	93
59	64		Veszprem Coal Mines (Veszpremi Szénbányák)	16	39	.	49
60	62		Budapest Thermal Power Plant Enterprise (Budapesti Hőerőmű Vállalat)	.	37	.	48

## List of Enterprises (continued)

Rank by output value	83	82	Name of enterprise	R a n k b y 1 9 8 3			
				Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales
61	89		Szekszard Meat Industry Enterprise (Szekszardi Husipari Vallalat)	.	66	26	.
62	60		Graboplast Cotton Mill & Synthetic Leather Factory of Gyor (Graboplast Gyori Pamut- szovo es Muborgyar)	99	81	62	66
63	73		Borsod-Abauj-Zemlen Megye Livestock Trad- ing & Meat Industry Enterprise (Borsod-Abauj-Zemlen Megyei Allatforgalmi es Husipari Vallalat)	.	.	55	94
64	66		South Alföld Gas Distribution Enterprise (Delalfoldi Gasszolgaltato Vallalat)	.	99	.	53
65	69		Matra Foothills Coal Mines (Matraaljai Szenbanyak)	30	33	.	52
66	63		Budapest Power Utility (Budapesti Elektromos Muvek)	94	10	.	6
67	65		Petroleum Prospecting Enterprise (Koolajkutato Vallalat)	87	55	.	54
68	61		Budapest Chemical Works (Budapesti Vegyimuvek)	.	.	.	55
69	70		Kaposvar Meat Combine (Kaposvari Huskombinat)	.	58	34	.
70	58		Ganz Electrical Works (Ganz Villamosagi Muvek)	29	64	53	99
71	85		Precision Mechanics Enterprise (Finomechanikai Vallalat; FMV)	51	.	19	.
72	76		Beloianisz Telecommunication Equipment Factory (BHG Híradástechnikai Vallalat)	18	84	31	.
73	68		Cotton Spinning Enterprise (Pamutfonóipari Vallalat)	42	61	.	63
74	81		Hungarian Refrigeration Industry Ent. (Magyar Hűtőipari Vallalat)	62	47	91	76
75	71		Household Textile Ent., Szombathely (Lakástextil Vallalat; Latex)	31	76	.	60
76	92		Baranya Megye Livestock Trading & Meat Industry Enterprise (Baranya Megyei Allat- forgalmi es Husipari Vallalat)	.	.	51	.
77	87		North Hungary Chemical Works (Északmagyarországi Vegyiművek)	.	67	56	81
78	83		Hajdu-Bihar Megye Livestock Trading & Meat Industry Enterprise (Hajdu-Bihar Megyei Allatforgalmi es Husipari Vallalat)	.	.	45	.
79	77		Oroszlány Coal Mines (Oroszlányi Szenbanyak)	23	31	.	59
80	79		Machine-Tool Industry Works (Szerszámgyártóipari Muvek; SZIM)	40	69	38	.

## List of Enterprises (continued)

Rank by output value	81	82	Name of enterprise	Rank by 1983			
				Per- son- nel	Gross fixed assets	Export sales	Domes- tic sales
	81	86	Hungarian Optical Works (Magyar Optikai Művek; MOM)	22	74	30	.
	82	74	Buda Varnish, Paint & Synthetic Resin Factory (Budalakk- Festék és Magyaranyaggyár)	.	.	.	57
	83	75	Hungaria Plastics Fabrication Enterprise (Hungaria Műanyagfeldolgozó Vállalat)	.	79	.	64
	84	80	Pest-Nograd Megye Livestock Trading & Meat Industry Enterprise (Pest-Nograd Megyei Állatforgalmi és Húsipari Vállalat)	.	.	.	.
	85	88	Alkaloid Chemical Factory (Alkaloida Vegyeszeti Gyar)	.	.	40	.
	86	72	Kecskemet Poultry Processing Enterprise (Kecskemeti Baromfifeldolgozó Vállalat)	.	.	21	.
	87	67	North Trans-Danubian Power Supply Ent. (Északdunántúli Áramszolgáltatás Vállalat)	71	14	.	8
	88	94	Biogal Pharmaceutical Factory (Biogal Gyógyszergyár)	.	.	81	80
	89	78	Hungarian Silk Industry Enterprise (Magyar Selyemipari Vállalat)	38	80	83	84
	90	.	Almasfuzito Alumina Factory (Almasfuzitoi Tímfoldgyár)	.	65	24	.
	91	82	Foundry Enterprise (Ontodei Vállalat)	46	90	.	72
	92	84	Trans-Tisza Power Supply Enterprise (Tiszaentúli Áramszolgáltatás Vállalat)	97	19	.	22
	93	97	Peremarton Chemical Industry Enterprise (Peremartoni Vegyipari Vállalat)	.	.	.	68
	94	91	Kobanya Brewery (Kobanyai Sörgyár)	68	72	.	31
	95	.	Central Trans-Danubian Gas Distribution Enterprise (Középdunántúli Gázszolgáltatás Vállalat; KÖGAZ)	.	.	.	65
	96	90	Bekes Megye Grain Trading & Milling In- dustry Enterprise (Bekes Megyei Gabona- forgalmi és Malomipari Vállalat)	.	.	.	74
	97	96	Caola Cosmetics & Household Chemicals In- dustry Enterprise (Caola Kozmetikai és Háztartásvégypari Vállalat)	.	.	.	73
	98	98	Tisza Shoe Factory (Tisza Cipogár)	43	.	97	90
	99	95	Budapest Leather Industry Enterprise (Budapesti Bőrípari Vállalat)	.	.	.	71
100	93		December 4th Wire Works (December 4 Drótművek)	.	.	90	97

Fewer changes occurred in the club's membership in 1983 than in 1982. The Club of 100 has only one new member, the Central Trans-Danubian Gas Distribution Enterprise; and a returning member, the Almasfuzito Alumina Factory, which had "suspended" its membership in 1982. And there are two dropouts from the top 100 list: the Electrical Equipment and Electronics Enterprise (Villamos Berendezes es Elektronikai Vallalat), and the Building Joinery and Lumber Industry Enterprise (Epuletasztalos- es Faipari Vallalat).

The Danube Petroleum Industry Enterprise, and the Great Alfold Petroleum and Natural Gas Enterprise have been heading the list since 1980. Another oil enterprise, the Tisza Petroleum Industry Enterprise, bumped Raba from third place in 1982, but in 1983 Raba regained its former position. There have been no newcomers among the top 10 since 1981.

When ranked by output in value terms, the meat industry enterprises lost ground in 1982, but have been able to advance in 1983. One of them, the Szekszard Meat Industry Enterprise, surged ahead the most, by 28 places. It is followed by the Baranya Megye Livestock Trading and Meat Industry Enterprise, while the the Beloiannisz Telecommunication Equipment Factory continued its advance. However, the power supply enterprises' surge ahead has slowed down and two of them, EDASZ [North Trans-Danubian Power Supply Enterprise] and TITASZ [Trans-Tisza Power Supply Enterprise] have lost considerable ground.

The stabilization of the club's membership in 1983 and the narrower limits of the changes in the members' positions as compared with 1982 also indicate that changes in the system of enterprise organization came to a halt in 1983. Whereas the greatest loss in 1982 was 61 places, for example, in 1983 it was only a third as much. The greatest gains (27 and 28 places respectively) were approximately the same both years.

Among the top 100 enterprises ranked by the value of their output, the number of enterprises that make the list also on the basis of their export sales has increased by five; and the number of enterprises that belong on the list also on the basis of their domestic sales has declined by three. Among the large enterprises, it seems, the export dependence of how they rank has increased somewhat.

Among the top 100 enterprises ranked by the value of their output, the number of enterprises that made the list also on the basis of the other indicators developed as follows:

Indicators	Number of enterprise		
	1981	1982	1983
Number of employees	52	58	58
Value of fixed assets	72	73	73
Export sales	54	56	61
Domestic sales	76	82	79

Among the top 100 enterprises there are in all 25 that make the list on the basis of all five indicators. But it is interesting that there is not one among them that could qualify for first place on the basis of all five indicators.

The greatest rearrangement has occurred in ranking the enterprises by export sales. The meat industry enterprises were the ones that improved their positions considerably (by 15 to 27 places). The biggest losses of position (by 10 to 18 places) were in the refrigeration and machine industries. Interestingly, none of the machine industry enterprises that advanced in position on the basis of export sales belongs to the club on the basis of output value.

The ranking of the enterprises appears to be the most stable on the basis of the number of employees and the value of fixed assets. There has been hardly any change in positions on the basis of the resources held. Although they are not yet members of the Club of 100, the Paks Nuclear Power Plant (Paksi Atomeromu) and the Microelectronics Enterprise (Mikorelektronikai Vallalat) have already emerged in the 81-100 range by fixed assets, reflecting new elements of the industrial structure. The Microelectronics Enterprise also has practically shot to 56th place in terms of the size of its personnel.

Among the enterprises ranked by domestic sales, the extent of the changes in position was about average. Here the six dropouts are more noteworthy and the newcomers: four of the dropouts are leading the list based on export sales, their places essentially unchanged (Ikarus, Tungsram, Chinoin, and Kobanya Pharmaceutical Factory).

Changes in Rank	Shifts by 3 or more places	Limits of shifts (places)	No. of replacements
<u>Indicators</u>			
Personnel	30	+10 -12	3
Value of fixed assets	35	+28 -9	5
Output in value terms	56	+16 -21	2
Domestic sales	41	+13 -30	6
Export sales	59	+27 -29	8

Three of the enterprises succeeded in advancing into the category of over 10 billion forints of output, but only one enterprise was able to replace them in the 5- to 10-billion category.

The data characterizing the size and performance of the top 100 enterprises are summed up in the following table.

Value Categories of the Top 100 Enterprises (Number of Enterprises)

		B i l l i o n f o r i n t s				
<u>Indicators</u>		<u>10+</u>	<u>5-10</u>	<u>2-5</u>	<u>1-2</u>	<u>0.5-1</u>
Output in value terms	1982	11	26	63	-	-
	1983	14	24	62	-	-
Export sales	1982	2	4	18	24	52
	1983	2	4	19	29	46
Domestic sales	1982	8	25	52	15	-
	1983	9	24	53	14	-
Gross fixed assets	1982	12	18	42	28	-
	1983	12	19	43	26	-

# Categories of the Top 100 Enterprise by Size of Personnel (Enterprises)

	1982	1983
Over 10,000 employees	15	16
5,000 to 10,000 employees	38	30
2,000 to 5,000 employees	47	54

Among the trusts, there has been only one change: the Csepel Iron and Steel Works, which ranked seventh in 1982, has ceased, and thus the trusts behind it have moved up one place. There is no change in how the trusts rank by output value, and there are only shifts of one place each on the basis of the other indicators.

## The Nine Industrial Trusts by Value Categories (Number of Trusts)

		B i l l i o n f o r i n t s					
		10+	5-10	2-5	1-2	0.5-1	0.5-
Output value	1982	8	1	1	-	-	-
	1983	7	2	-	-	-	-
Gross fixed assets	1982	6	4	-	-	-	-
	1983	5	4	-	-	-	-
Export sales	1982	1	3	1	1	1	3
	1983	2	2	-	1	1	3
Domestic sales	1982	9	-	1	-	-	-
	1983	8	-	1	-	-	-

Of the nine industrial trusts, eight had more than 10,000 employees each, and the ninth one had between 5,000 and 10,000 employees.

Lacking the enterprises' balance sheets, we are unable to present a picture of the changes in how the individual enterprises ranked on the basis of profitability. This information is essential for the practical implementation of the changes that have been decided in the system of macroeconomic management (flow of capital, commercial credits, sale of bonds, etc.). From the viewpoint of moving their capital, the owners of financial resources should know the financial situation of the enterprises, because they are able to decide only on the basis of such information where to invest and where to disinvest. This would require, among other things, also the publishing of the enterprises' balance sheets.

1014

CS0: 2500/7

PROGRESS ON MATHEMATICAL MODEL OF SOCIOECONOMIC CRISIS

Warsaw EKONOMISTA in Polish No 5-6, 1983 pp 871-886

[Article by Jerzy Eysymontt and Wojciech Maciejewski: "Socioeconomic Crises in Poland: A Mathematical Model Interpretation"]

[Excerpts] Introduction\*

The objective of this study was to elucidate the phenomena which will be referred to further on as socioeconomic crises by using a formal model representing the basic components of the mechanism of their origination. The studies and results are based on data for 26 years between 1955 and 1980.

An analysis of the available publications on the mechanisms of crisis origination in centrally planned economies has identified several basic phases of progress in research in this area. The first stage consisted in refuting the theoretically postulated law of stable economic growth. At the second step, it was noted that nonuniformities of growth reveal long-range regular patterns which cause continuous positive or negative fluctuations relative to the multiannual trends.<sup>1</sup> Scientists began to distinguish the successive stages of development and phases of growth.

Their interest was concentrated for a long time exclusively on economic assignments, and the main source of disruption was seen in the existing system of economic functioning, and particularly the processes of planning and implementation of investment. Later, economic factors began to be linked with situations in social and political spheres.<sup>2</sup>

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\*The model of crises presented here was developed in cooperation with Dorota Kalinin, Ryszard Kokoszczyński and Wojciech Otto. The text is a revised version of the paper presented at "CEMA Forecasts: A Workshop" (Section of Economic Sciences, Warsaw University) in October 1982 and at the Ninth Seminar on "Problems of Construction and Evaluation of Macroeconomic Models" (Institute of Econometrics and Statistics, Lodz University) in December 1982.

In this paper, we present an overall description of the development cycle and a conceptual model of the phenomenon which constitutes the basis for our formalized model. We realize that relationships represented in the model may either find no confirmation in empiric study, or, because of a lack of quantitative characteristics of individual features, would not lend themselves to such empiric verification. The article consists of five sections. In the first section, we describe the basic properties of the socioeconomic system from the viewpoint of this subject for the period between 1955 and 1980. In the second section, we describe the principal mechanisms of cyclic variation in this system. In the third section, we offer a classification of individual factors that are recognized as essential in descriptions of this cyclic mechanism and then proceed to an overall ideal model of crises. In conclusion, general description of the method of research, the formulation of the mathematical model and selected results of empiric studies are presented.<sup>3</sup>

In summing up the results of earlier studies, we can point out three problems which seem important to us.

The results of discriminative analysis confirm the assumptions concerning the manifestation of low stress points (or crisis years). Two alternative specifications of variables in the discriminant function selected by us were constructed in such a manner that in alternative A variables of an economic nature figure alongside variables pertaining to the situation in the social sphere. In contrast, in alternative B we are dealing with the classical set of economic variables (except for the ratio of number of new marriages to number of new housing units placed on the market and expressed as an indicator of increases in this ratio [RMIESZ]). As a result, the alternative A should be a reflection of the situation in the socioeconomic sphere, whereas alternative B would only represent the economic situation. These premises were confirmed by results of discriminant analysis (see Figs. 2 and 3). Model A pointed up mainly the years 1956, 1970 and 1980. In the meantime, in Model B, the value of the discriminant function rose considerably not only for these years but also in 1963 (the year of very poor crops) and in 1976. All these findings can also be confirmed indirectly by the proper selection of variables for the discriminant function. In accordance with our basic postulate, we assume that we explore crises of a socioeconomic nature, so that alternative A of the discriminant function was recognized as the main one.

Another important component of research tools applied to crises is the classical econometric model which can serve as a source of variables in the discriminant function. Compared to other existing econometric models of centrally planned economies, this model differs in two main components. In our formulation, the econometric model places a major significance on social variables, as well as variables pertaining to the political sphere. (According to the classification adopted, the values of discriminant functions calculated previously were used as arguments.) None of the currently existing econometric models of centrally planned economies take into consideration factors from the social and political spheres. This calls for

constructing a model with new specific features. The first variant of such a model is currently being evaluated, and despite difficulties in defining the arguments (socioeconomic variables) it has confirmed a number of postulates concerning the statement of individual equations. In mid-1983, admissible formulations of individual equations were derived. At the next stage of studies, we will test the model, its dynamic properties, effects of occurrence of inverse correlations, etc.

We believe that this model will allow not only analyzing the phenomena referred to as socioeconomic crises *ex post facto*, but also could be a useful tool for analyzing diverse scenarios in the future development of the socioeconomic situation in Poland.

#### FOOTNOTES

1. One of the first studies was an article by J. Goldman entitled "Pace and Periodic Variations in the Development of Socialist Economies," GOSPODARKA PLANOWA, No 4, 1965. Currently, there is a large number of papers on this subject. Probably the most exhaustive overview of various methods of description of growth fluctuations, their causes and effects was given in the paper presented by D. Tarki in "Seminarium — prognozy RWPG" [CEMA Forecasts: A Workshop], Section of Economic Sciences, 1982 (multiplied manuscript).
2. See, e.g., J. Staniszkis, "Systemic Conditions of the Operation of an Industrial Enterprise in Poland," PRZEGLAD SOCJOLOGICZNY, No 2, 1980; A. Moskwa, "Crisis of the Development of the Crisis," PRZEGLAD EKONOMICZNY, March 1981; Z. Sadowski, "Conflict of Politics and Economics," POLITYKA, No 34, 1982; B. Mieczkowski, "The Relationship Between the Changes in Consumption and Politics in Poland," SOVIET STUDIES, No 2, 1978; V. Bunce, "The Political Consumption Cycle: A Comparative Analysis," SOVIET STUDIES, No 2, 1980.
3. For a detailed description of the empiric results of the first stage of development of the mathematical model, see the work by D. Kalinin, R. Kokoszczynski and W. Otto, "Identification of Crises as the First Stage in Developing Crisis Models," in "Seminarium — prognozy RWPG," Section of Economic Sciences of Warsaw University, 1983 (submitted for publication in PRZEGLAD STATYSTYCZNY).

9922

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## IMPACT OF CROP PESTS, DISEASES IN 1983, 1984 DISCUSSED

Warsaw NOWE ROLNICTWO in Polish No 5, May 84 pp 1-12

[Reports by members of the staff of the Institute of Plant Protection, Poznan, Poland: "Evaluation of the Health of Farm Crops in 1983 and Projections for the Manifestations of Major Crop Pests in 1984"]

[Text]

## Grain Crop Diseases and Pests

Felicyta Walczak, MS

The past year was not particularly favorable for grain crop vegetation. The long drought that prevailed over the largest part of the nation's territory impaired the vegetation of grain crops, particularly spring crops. The harvest of spring crops was lower than in 1982, both because of lower yields and a smaller area under crop. Winter crops' harvests, however, were generally higher. According to the data of the Chief Statistical Office, the average yield of grain crops in 1983 was 27.2 dt/ha, that is, 1.1 dt/ha higher than the previous year.

An initial assessment of the occurrence of most dangerous grain crop diseases indicated an increased prevalence compared to the previous year. In particular, increases were registered in the occurrence of the common mildew in wheat crops, as well as wheat brown rot and rye brown rot.

In 1983, there was also an increased incidence of the common mildew, *Erysiphe graminis* D.C., in winter wheat crops. Across the nation, more than 37 percent of plants with signs of the disease were recorded, that is, an increase of 9 percent compared with the preceding year. Most affected were winter wheat fields in southern and southeastern Poland. In Gdansk, Krosno and Szczecin Provinces, the number of affected plants was higher than 70 percent and in Zamosc, Rzeszow, Elblag and Bydgoszcz Provinces above 60 percent. A range of 50 to 60 percent of affected plants was registered in the following provinces: Slupsk, Przemysl, Poznan, Gorzow and Bielsko-Biala.

The wheat brown rot, *Puccinia triticoena* Erikss., was observed nationwide on more than 34 percent of winter wheat, that is, 10 percent higher than in

the previous year. Most affected were southeastern and eastern areas of Poland. In Krosno Province, the disease had an epidemic character, with more than 97 percent of plants affected (including more than 42 percent to a strong degree). A range of 60 to 80 percent affected plants was observed in the following provinces: Zamosc, Siedlce, Rzeszow, Lublin, Kielce and Lodz.

The rye brown rot, *Puccinia dispersa* Erikss et Henn., also had a wider occurrence than in a comparable period of the preceding year. Nationwide, more than 35 percent of plants were affected, which is 11 percent higher than in 1982. Rye fields in southeastern Poland suffered the most. In Radom Province, more than 90 percent of plants were diseased (including more than 20 percent to a strong degree). A high prevalence in the range of 60 to 80 percent of affected plants was observed in rye crops in these provinces: Krosno, Kielce, Siedlce, Rzeszow, Przemyśl, Nowy Sacz, Zamosc, Lublin and Lodz.

In 1983, an increase in the incidence of the rye disease *Puccinia graminis* Pers. was also recorded. A relatively high increase of the disease was observed in Krosno and Lublin Provinces, where the number of affected plants increased by 10 percent. The disease had the highest incidence in the following provinces: Zamosc (over 44 percent), Skierniewice (over 31 percent) and Lublin (23 percent). Nationally, the average was 7.7 percent of plants affected, that is, 1.1 percent above the previous year.

In the coming vegetation season, no further increase is predicted for the prevalence of common mildew in wheat crops, wheat brown rot or rye brown rot. As to *Puccinia graminis* Pers., its increase is likely in wheat fields, particularly in areas where its highest incidence has been registered--namely, in southern and southeastern Poland.

Of other diseases, only *Ophiobolus graminis* Sacc. had a substantial prevalence in southern and eastern parts of the nation, as well as on the Kujawy and in Pila and Opole Provinces.

Insect pests did not affect grain crops to any substantial degree in 1983. Only *Hoplodiplosis equestris* Wagner was observed to a large extent in the south of the nation, where a further danger of that pest could be expected in 1984.

A certain increase of *Oscinella frit* L. was observed in corn fields in some parts of the nation (Lodz, Przemyśl, Skierniewice and Wrocław).

#### Potato and Sugar Beet Diseases and Pests

##### Potatoes

Walenty Babilas, DSc, and Krzysztof Piekarczyk, DSc

According to estimates of the Chief Statistical Office, in 1983 more than 2.2 million ha were planted for potatoes, with a total harvest of about 34

million tons. The mean tuber yield per ha was 152 dt, slightly higher than in 1982, but 20 dt lower than the mean for 1976-80. The national average yield of potato harvests in 1983, and especially medium-late and late varieties was largely affected by summer soil drought, which in some areas continued through the first weeks of September.

Additional losses of potato crops were caused by an exceptionally high prevalence of the Colorado beetle, especially in those areas and fields where the optimal schedule for the control of this pest was not observed. These factors resulted in a large variation of potato harvests in the individual macroregions of Poland. For instance, the mean tuber yield per ha in central-western macroregion (Bydgoszcz, Konin, Kalisz, Pila, Poznan, Turin and Wloclawek), which suffered most from the dry soil, was in the area of 130 dt. On the other hand, in the southeastern region, where precipitation during the vegetation period was at or above the norm, an average of 170 dt was harvested from 1 hectare, despite the relatively higher incidence of potato diseases than in other macroregions.

According to the Institute of Meteorology and Water Management, the total rainfall over the vegetation period for the past year (April through October) on the national scale ranged from 200 to 400 mm and was generally below the norm. The greatest deficit of precipitation compared to the multiannual average was in some of the central and western districts. For instance, in the Poznan area 202 mm precipitation was registered, which is hardly 58 percent of the norm.

#### Potato Blight

*Phytophthora infestans* DB.

The soil drought that prevailed in the summer months of 1983 over a large part of the nation effectively contained the development and spread of the disease on potato fields. For that reason, as of 1982, in some regions just traces of the disease or even its complete absence were registered. Although the disease prevalence was generally at its lowest level over more than a decade, in some of the provinces the disease had a higher incidence, and especially in fields planted with the earlier varieties, as well as medium-late and late varieties. This was observed especially in provinces of the southeastern macroregion, where precipitation during the summer was normal or above normal. As a result, potato blight statistics for 1983 were characterized by a widespread prevalence in individual regions of the nation depending on local weather conditions.

In early potato fields, the prevalence of the disease in 1983 was among the lowest values over the past several years. The national average in that group of varieties did not exceed about 16 percent of leaf surface affected. Relatively higher incidence in early varieties (over 30 percent of affected leaf surface) was observed in the southeastern part of the nation, especially in the following provinces: Krosno (about 100 percent of affected leaf area), Nowy Sacz and Zamosc (72-77 percent), Tarnow and Rzeszow (about 57 percent) and Przemyśl (about 42 percent). In southern provinces and some

of the eastern provinces (Bialystok, Chelm, Lublin), potato blight on early varieties was observed to a moderate degree, affecting on average from 15 to 30 percent of the leaf surface. Generally, the disease could affect the harvests of the early varieties only in the southeastern macroregion. In other areas, its damage was insignificant. It should be mentioned that the harvest of early potato varieties was generally satisfactory compared with medium-late and late varieties. The latter suffered much more from the drought.

As a result of a relatively limited occurrence of potato blight on early varieties and the summer drought covering a large part of the nation, the incidence of the disease among medium-late and late varieties was generally low. On average, about 23 percent of investigated plants indicated the disease, mainly to a low degree. Even in that case, as on early varieties, the range of damage was strongly divergent, from traces (Lodz, Pila, Bydgoszcz, Siedlce, Gorzow) to strong degrees. Of the provinces which had a relatively high percentage of affected plants on medium-late and late varieties in 1983, the following should be listed in order of decreasing prevalence: Krosno (about 100 percent), Nowy Sacz (about 87 percent), Zamosc and Tarnow (about 78 percent), Rzeszow (about 70 percent), Przemysl and Piotrkow (about 65 percent) and Lublin (about 57 percent). Relatively more affected were potato plantations in the southeastern macroregion and less in southern and southeastern regions, as well as in Elblag, Piotrkow and Radom Provinces. In the remaining areas (except for some local occasions), the disease had virtually no economic affect, while the major negative factor for the harvest of late potato varieties was dry soil.

The summer drought in many parts of the nation caused premature wilting of potato stems, and as a result the harvesting of tubers 2 or 3 weeks earlier than in preceding years. The harvesting mainly occurred in dry weather conditions, and the tubers were clean and dry.

Analysis conducted during the harvesting in the fall of 1983 also indicated a low national percentage of infected potato tubers, namely, about 1.5 percent. This was the lowest such figure since 1962. For comparison: in the years of widespread strong epiphytosis (namely, in 1980 and 1981), an average percentage of affected tubers was 6.5 and 8.5 percent, respectively. Only in the province of Elblag the Plant Protection Service in 1983 registered about 8.5 percent of affected tubers. In a number of other provinces in the southern and southeastern regions, the figure varied from 3.0 to 3.6 percent. In particular, in Slupsk, Koszalin, Chelm, Rzeszow and Krosno. In most of the remaining provinces, the disease prevalence was from 0.5 to 2.0 percent, or just traces (below 0.5 percent). In some provinces, no cases of infected tubers were recorded, including Bydgoszcz, Wloclawek and Lodz.

Of other fungal diseases that were found locally in high prevalence, one should mention the dry and brown early blight of potato leaves (*Alternaria* sp.). A fairly large percentage of diseased plants was registered in the following provinces: Krosno (about 67 percent), Jelenia Gora and Pila (about 45 percent), Walbrzych (about 39 percent) and Radom (about 31 percent). The average prevalence of black leg on potatoes (*Erwinia carotovora* var. *atroseptica*

Jenn.) in 1983 had a national average prevalence of about 2.5 percent. A slightly higher figure above 4 percent was reported by the following provinces: Kalisz, Katowice, Koszalin, Legnica, Poznan and Wroclaw.

Potato black scurf (*Rhizoctonia solani* Kühn.) was relatively widespread during the vegetation in the following provinces: Bialystok, Koszalin, Olsztyn, Szczecin, Premysl, Radom and Siedlce, ranging from 7 to 14 percent of plants affected.

Instances of common scab (*Streptomyces scabies* Waks. et Henr.) on potato tubers were recorded everywhere, especially in the following provinces: Bielsko-Biala, Ciechanow, Pila, Przemyśl, Radom, Wroclaw, Zamosc and Zielona Gora (more than 20 percent of plants affected).

#### Forecast for 1984

Against the background of multiannual statistics, the past two years had an unusually weak prevalence of potato disease in Poland. The figures were lowest for many years, both on early and late potato varieties.

A further drop of disease prevalence during the vegetation season in the current year is unlikely. We believe that generally there will be an increase of hazard to potato fields from disease, although not to a degree that could result in a pervasive strong epiphytosis of phytoflora that would spread to the entire nation.

The incidence of infection and degree of its virulence will probably be different in individual agroclimatic regions. A relatively high level should be expected on potato fields in southeastern macroregion and in the belt of northern provinces, especially in Elblag. In southern and southeastern parts of the country, local epidemics may develop. A definitely lower danger exists for potato crops in the following macroregions: central-western, central and partly southwestern. In these macroregions, a continuing deficit of soil moisture will develop which is not offset by precipitation during winter and spring and will have containing effects to the proliferation of disease.

#### Viral Diseases of Potato

In 1983, as in previous years, the potato protection service registered nationwide various levels of prevalence of viral disease in potato crops depending on the location and according to the affected phase.

During the flowering of potatoes, a national average of 7 percent of inspected plants presented signs of viral infection. The prevalence did not deviate from the multiannual average for 1961-82, but was 0.5 percent higher than in the vegetation season of 1982. The highest levels were reported in the following provinces: Czestochowa (from 6 to 16 percent), Krosno (from 7 to 15 percent), Ciechanow (from 4 to almost 11 percent) and Krakow (from 4 to 9.5 percent).

It should be noted that the results of observations conducted by the plant protection service concern exclusively plants on fields with manifest signs of viral disease, mainly curly tops and viral complexes causing acute signs of plant degeneration and to a lesser degree the Y and M viruses. The documentation chart reporting the results of observations does not give separate figures for individual potato viral diseases. According to a prognosis prepared by the Viral Disease and Seed Laboratory of the Potato Institute, local plant protection services in the past three years have observed steadily increasing incidence of curly top compared with Y and M viruses.

A relatively high percentage of virus-infected plants in the fields (from about 10 to 16 percent) was reported in 1983 in the following provinces: Katowice, Koszalin, Nowy Sacz, Kalisz, Ciechanow, Wroclaw, Krosno and Czestochowa. A slightly lower level (between 8 and 10 percent) was observed in several other provinces: including Krakow, Bielsko-Biala, Lodz, Opole, Warsaw, Legnica, Walbrzych and Zielona Gora. Generally, least affected by viral diseases were potato fields in southeastern, eastern and partly central provinces (Plock, Skierniewice, Sieradz, Wroclaw, Konin and Torun). From 2 to 4 percent of plants were affected during 1983, which is much lower than the national average.

The prevalence and virulence of viral diseases of potatoes in the current vegetation season will depend on the frequency of occurrence of infected seed tubers, the terms of development and flight dynamics of aphids that are vectors of the viral disease and the weather conditions during the vegetation period.

Definitely at risk by viral disease will be potato plantations in southern, southwestern and western parts of the nation (danger zones IV and III), where a higher prevalence of infected plants is to be expected. Potato crops in southeastern, eastern and partly northern provinces (mainly hazard zones I and II) will experience a much lower degree of viral infection.

#### Colorado Beetle

*Leptinotarsa decemlineata* Say

The development and behavior of this species in the past few years followed the ecological and biological principles regulating the dynamics of pest populations. Over the last three years, several characteristic symptoms have been observed, indicating the beetle gradations. Specifically, these were: (1) a drop in the mortality of hibernating populations, as well as larvae and pupae; (2) a rise in fertility of spring generation of beetles; (3) an increased abundance of larvae and beetles on plantations; and (4) increased numbers of potato plants infected by the pest.

These biological indicators, combined with favorable atmospheric conditions, created at the beginning of the season a setting conducive for development of the pest. In 1983, a number of "gradation"-producing conditions concurred within a relatively short period, resulting in a sudden infestation of young potato plantations almost all over the country. Initially, the

situation was difficult. In some areas, insecticides were in short supply. High air temperatures lowered the efficacy of chemical means. However, already by June, which is the optimal time for chemical intervention, the situation improved. Supply of insecticides picked up and the service of plant protection issued a number of effective recommendations which helped stop the proliferation of the pest. Nationwide, about 50 percent of plants were infested with the pest. Of these, 7 percent were to a strong degree and 16.7 to a medium degree. It was a considerable growth compared with 1982, but on the national scale no general significant drop of the potato harvest was caused by this pest. The major losses (which were observed locally) were the result of a lack of chemicals at the initial vegetation stage or their inefficacy, as well as incorrect performance of extermination procedures.

A spatial study of the occurrence of the Colorado beetle showed that most affected were eastern parts of the nation. These were followed by central provinces and also (after a break of several years) some provinces in western Poland.

#### Forecast for 1984

Considering the multiannual development cycle of the Colorado beetle, we believe that this year a high prevalence of the pest should be expected, especially in eastern, central and partly western Poland, although there are certain grounds to believe that this prevalence will be below the levels of the past year. A retrogradation period is likely to set in. Regardless of the expected frequency of occurrence of the pest, we should be prepared in terms of supplies of pesticide and equipment, as well as take organizational steps to protect produce and seed potatoes by an average of 1.5 or two treatments. A more stringent control of pesticide production is recommended to ensure their meeting the appropriate parameters.

It should be borne in mind that the Colorado beetle is a pest that is relatively easy to maintain at a level which is not damaging economically, given the fulfillment of the above conditions. In ecological and economic terms, a 100 percent elimination of the species is not required. In practice, this is in fact impossible. The entire problem of the Colorado beetle, therefore, is reduced to the proper understanding that protection of potatoes is worthwhile and that, of course, the possibility of this protection, as well as proper surveillance, is necessary to be performed by the plant protection services.

Of other pests in potato crops, special attention should be given to cut worms *Agrotinae* and wire worms *Elateridae*. Cut worms have occurred at a relatively high level on potatoes, as well as on other crops, damaging in some areas considerable percentages of tubers. The level of damage caused by cut worms (15 to 80 percent of tubers affected) was registered in southwestern, western and central parts of the nation. Wire worms were observed at a relatively high level in the following provinces: Zamosc, Krakow, Chelm, Krosno and Plock.

We should expect an increase in the abundance and degree of damage, especially caused by cut worms on various crops, including potatoes.

## Sugar Beets

Danuta Malachowska, MS

Despite seasonal droughts that took place in 1983 in various parts of the nation, we had record sugar beet harvests. The total sugar output of the country amounted to 1.97 million tons. The average yield per hectare in Poland was 33.6 tons, and the sugar content reached 16.54 percent (data of the Association of Sugar Industries in Warsaw).

The most significant field pests were fleas *Halticinas* and cut worms *Agrotinas*. On the national scale, a disconcerting growth in the prevalence of common mildew *Erysiphe communis* (Wallr.) Link. and root fission *Aphanomyces coohlioides* Dreschal. was observed. In some areas, there were outbursts of black root disease caused by *Beta virus 3* Wille.

Of a lower prevalence were the following pests and diseases: *Pegomyia* sp. (about 8 percent of sugar and fodder beets affected), beet aphid *Aphis fabae* Scop., pygmy beetle *Atomaria linearis* Steph., *Ceroaspora beticola* Sacc. (which affected 5.4 percent of plants on fodder beet fields), viral beet yellows *Beta virus 4* (Roland et Quanjier) Smith (that affected 4 percent of sugar beet plants and 5.4 percent of fodder beet plants) and *Peronospora achachtili* Fuck. (about 1 percent of sugar beet and fodder beet plants affected).

Below we give more detailed data on the major pests in 1983 and a projection for their occurrence in 1984.

### Pygmy Beetle

*Atomaria linearis* Steph.

Since 1982, an increase in the occurrence of this species has been observed. This resulted from favorable weather conditions for the development of this pest. In 1983, the national average prevalence was measured by 1.9 percent of plants affected (compared to 0.9 percent in 1981 and 1.3 percent in 1982). A higher level of prevalence of pygmy beetle was observed in the following six provinces: Chelm (9.7 percent of sugar beet plants affected), Elblag (9.7 percent), Gdansk (2.9 percent), Przemysl (4.6 percent), Wroclaw (6.9 percent) and Zamosc (24.6 percent).

In cases of an early and favorable spring in 1984, pygmy beetle may cause major damage to beet seedlings, especially in provinces where it was observed at a high prevalence level in the past year.

### Fleahoppers

*Halticinas*

Because of the favorable weather conditions, fleahoppers in 1983 caused considerable damage to beet plantations all over the nation. The average percentage of affected plants was 31.5; 20 percent of that amount were

damaged to a slight degree, 8.6 percent to a medium degree and 2.9 percent to a strong degree. The occurrence of the pest was much higher than the multiannual average, 15.2 percent. The highest percentage of affected plants was observed in the following provinces: Krosno (66.1 percent), Biala Podlaska (58.4 percent), Walbrzych (58.1 percent), Gdansk (55.7 percent), Wroclaw (52.7 percent) and Zamosc (50.3 percent). In the Wroclaw area, up to 18.5 percent of plants had a strong degree of damage.

Favorable conditions for hibernation of the pest suggest that in 1984 it might present a major problem as well.

#### Cutworms *Agrotinae*

Between 1981 and 1983, a gradual growth of the cutworm population in Poland was observed. This was due to favorable weather conditions. The prevalent species in that period was *Agrotis segetum* Schiff. In 1983 a particularly high frequency of the pest was registered in northwestern, southwestern, central and northern areas. The highest percentage of plants with affected roots was observed in the following provinces: Bydgoszcz (94.1 percent), Pila (91.7 percent), Szczecin (78.3 percent), Koszalin (71.2 percent), Slupsk (65.4 percent), Wroclaw (63.7 percent), Legnica (64.7 percent) and Radom (62.4 percent).

Lower prevalence of cutworms was observed in southwestern parts of the nation, where in the fall the average percentage of affected roots was not higher than 10 percent.

#### Forecast for 1984

The soil analysis made in the fall indicated an abundance of cutworms, which was at the highest level it has been in many years. Generally, over the entire nation, an alarming number of cutworms per  $m^2$  was recorded. The number of individuals per  $m^2$  of soil after harvesting varied from 0.16 individuals (Bialystok Province) to 5.76 (Slupsk Province). The most affected were the following provinces: Bydgoszcz (5.06 ind/ $m^2$ ), Wroclawek (5.34), Szczecin (4.16), Ostroleka (4.25), Gdansk (3.48), Czestochowa and Kielce (3.17), Chelm (4.0), Lublin (2.50), Koszalin (2.88), Pila (2.31) and Piotrkow (2.75).

In view of these data, in 1984 a major danger of a high level of occurrence of cutworms in the entire nation can be expected. The decisive factor will be weather conditions in the winter, spring and summer. Harsh and snowy winters and early and dry springs and summers are favorable for cutworms. During warm and moderate winters, cutworms are known to perish in masses thanks to various diseases. The 1983-84 winter is untypical. Temperature and moisture conditions are greatly varied.

For that reason, in 1984, despite relatively favorable and sometimes rainy winter, a definitive forecast is impossible. The decisive influence will

be exercised by subsequent weather conditions at the end of winter and during spring and summer.

In view of this, the district departments of plant protection in 1984 should pay special attention to surveillance of local weather conditions, because their influence on development of cutworms in various parts of the nation may be different regardless of the abundance of caterpillars found in the soil in the fall. Even a small number of hibernating individuals given favorable conditions, can present a major threat in spring and summer.

Particularly important period for development of cutworms is the season from mid-May to mid-July. If the vegetation season will be dry and warm, a dangerous abundance of cutworms should be expected. On the other hand, if it will be a cool and moist season, cutworms may not have any major economic impact.

#### Common Mildew

*Erysiphe communis* (Wallr.) Link.

A sharp increase in the abundance of this pathogen was observed in 1983. The average percentage of affected sugar beet plants was 18.3 percent, of which 7.5 percent had a low degree of disease, 6.1 percent medium and 4.7 percent strong degree. In 1980-82, just 2.7 to 6.2 percent of plants were affected by the disease. In 1983, the disease had a particularly strong development in Central Poland (Warsaw Province, 35 percent of plants affected; Lodz, 44.5 percent, Bydgoszcz, 48.1 percent and Wloclawek, 85.8 percent), as well as southern region (Gdansk Province, 58.7 percent) and southwestern region (Wroclaw, 47.4 percent).

#### Curly Top Disease

*Beta virus 3* Wille

In 1983, the weather conditions were favorable for the vector of this virus. As a result, in the regions with high abundance of *Pisum quadrata* Fieb., a high level of curly top prevalence was observed. On the national scale, the mean percentage of affected sugar beet plants was (as in 1982) 0.3 percent. The provinces where the level of the disease was the highest were: Torun (average 2.5 percent of plants diseased) and Zielona Gora (1.4 percent). The lowest level of affected plants was observed in Kalisz Province (1.0 percent).

If the summer of 1984 will be warm and dry, the disease can have an even higher prevalence than in 1983.

#### Black Root of Seedlings

On the national scale, the prevalence of this disease remained approximately at the past year's level and amounted to 6.3 percent of plants affected for sugar beets and 5.1 percent for fodder beets.

In many provinces in 1983 the occurrence of *Aphanomyces cochliformis* Drechs. was registered at a great level on plantations of both sugar and fodder beets. The provinces that reported the occurrence of this disease are: Czestochowa, Gdansk, Legnica, Leszno, Nowy Sacz, Opole, Poznan, Rzeszow, Skierniewice, Walbrzych and Wroclaw. The highest percentages of plants affected were observed in Gdansk (1-30 percent), Leszno (10-60 percent) and Rzeszow (0.1-70 percent).

Report by Krzysztof Piekarczyk, DSc

Beet Aphid  
*Aphis fabae* Scop.

This species experienced retrogradation in its dynamics in 1983. The fact that retrogradation took place in years with characteristically low precipitation and high air temperatures can be interpreted (over and above the intrapopulational dynamics) also by certain unfavorable effects of unusually high maximum temperatures. Despite a generally low prevalence of the pest in the nation, a slightly higher occurrence was observed in the following provinces: Bielsko-Biala, Chelm and Elblag (over 20 percent of plants affected). However, beet aphid infestation had no significant influence on harvests.

Forecast for 1984

Against the background of numerical, spatial and economic regression of the prevalence of beet aphid on beets, there is a dangerous growth in the density of hibernating aphid eggs on spindle-tree shrubs. The national average is 10 aphid eggs per 10 cm of sprout. For the past three years, these numbers were 1.6, 4.0 and 5.4 eggs, respectively. The increase in the hibernating population of the species is significant and presents a potential serious hazard to beet fields in 1984.

The most affected zone is the southern part of the nation, except for several piedmont and mountain areas. The average prevalence of eggs in those regions varies from 10 to over 20 per 10 cm of sprout. Most affected regions are territorial enclaves in the western part of the country (Pila, Bydgoszcz, Poznan, Leszno, Szczecin) and in the east (Siedlce and Bialystok). Since beet aphid population has reached a depression in its gradational cycle in 1983, which is a turning point in its cycle, one should expect in 1984 the beginning of a progradational development and the attendant increase in the population of the pest. Whether this growth will be insignificant or very strong will be decided by other factors, especially the weather.

Diseases and Pests of Industrial Crops

Winter Rape

Romuald Lewartowski, DSc, and Krzysztof Piekarczyk, DSc

The rape and agrimony harvests, despite a reduced area under cultivation compared to the previous year (by 11,400 ha), are much higher than last year

(by 119,100 tons) thanks to good yields. The area under rape and agrimony fields totaled 247,000 ha. The average yield was 22.4 dt per ha (as against 16.8 dt per ha in 1982).

**Rape Curculio**  
*Ceutorhynchus napi* Gyll.

The pest produced less damage on rape fields than last year. The average prevalence for the nation was 16 percent of plants affected, that is, by 2.1 percent below the level of last year. The highest average prevalence and degree of damage due to curculio were observed in the following provinces: Warsaw (55.0 percent), Zamosc (43.9), Lodz (41.8), Przemysl (43.1), Walbrzych (33.0), Gorzow (32.3), Opole (32.0), Wroclaw (30.7) and Szczecin (29.6 percent of plants affected). The significant drop in curculio larvae damage compared with 1982 was registered in following provinces: Wroclaw (from 49.1 to 30.7 percent) and Walbrzych (from 50.3 to 33.0 percent of plants affected). A significant growth in damage caused by this pest compared with last years was observed in Przemysl Province (from 16.1 to 41.3 percent).

As in 1982, numerous *Ceutorhynchus napi* beetles are likely to be observed in many rape fields, especially in the southeast (Zamosc and Przemysl Provinces), southwest (Wroclaw, Walbrzych and Opole Provinces) and northwestern areas (Szczecin and Gorzow), as well as in Warsaw and Lodz Provinces in the spring of 1984. In those areas, where in 1983 the prevalence of the pest ranged from 20 to 50 percent and more than 50 percent of plants were affected, this pest can present a major danger this year as well.

**Cabbage Seedstalk Curculio**  
*Ceutorhynchus quadridens* Panz.

The average number of plants affected in rape fields for the nation was 27.3 percent, that is, 3.2 percent below last year's level. Most affected were the crops in the following provinces: Pila (58.3 percent), Nowy Sacz (54.6), Wroclaw (53.6), Zamosc (50.3), Slupsk (48.8), Przemysl (47.2), Walbrzych (46.9), Gorzow (45.6), Opole (44.4), Suwalki (39.2), Gdansk (37.3), Lomza (36.8), Elblag (36.5), Zielona Gora (35.4) and Lodz (34.4 percent of plants affected).

In the remaining provinces, the prevalence of the pest ranged from 0.3 percent in Ostroleka to 33.1 percent in Bielsko-Biala.

A major rise in the prevalence of the pest compared with 1982 was recorded on the territory of Krakow Province (from 16.4 to 37.4 percent of plants). A drastic drop in the pest compared with 1982 was observed in the following provinces: Warsaw (from 66.0 to 31.5 percent), Poznan (from 47.1 to 18.8 percent), Legnica (from 39.1 to 11.5 percent), Chelm (from 38.7 to 15.8 percent) and Sieradz (from 27.3 to 8.4 percent of plants affected).

In 1984, the seedstalk curculio presents a major danger to plantations in northern provinces (Pila, Slupsk, Elblag, Suwalki, Gdansk, Lomza), as well

as western (Gorzow, Zielona Gora), southwestern (Walbrzych, Wroclaw, Opole) and southeastern areas (Nowy Sacz, Przemysl and Zamosc). An increase in the spread of this pest is observed from year to year. The hazard is at lowest level in the following provinces: Ostroleka, Kielce, Radom, Sieradz, Skierniewice and Ciechanow, where less than 10 percent of plants are affected.

#### *Meligethes aeneus* F.

The incidence of *Meligethes aeneus* F. on rape fields, as measured by the percentage of destroyed flower buds and the abundance of beetles on the fields of winter rape, has increased compared with 1982. In 1983, the national average was 22.4 percent of buds destroyed, which was higher by 5.6 percent than the average level for the preceding year. The pest did most damage in the following provinces: Warsaw (54.7 percent of plants affected), Olsztyn (36.6), Lonza (36.2), Gorzow (34.0), Zamosc (33.9), Wloclawek (33.1), Szczecin (33.0), Elblag (33.7) and Siedlce (30.2 percent). A high degree of damage in the range of 20 to 30 percent was also recorded in the southwestern parts of the nation (Zielona Gora, Wroclaw, Opole and Katowice Provinces), southeastern and eastern regions (Tarnow, Tarnobrzeg, Krosno, Przemysl, Chelm and Bialystok Provinces) and in the north (Slupsk and Suwalki Provinces), as well as in Bydgoszcz, Torun, Ciechanow, Ostroleka, Lodz and Skierniewice Provinces. In the remaining provinces, the mean levels varied in the range from 5.7 percent in the Radom Province to 19.8 in Pila Province.

The increase in the pest compared with the previous year was particularly great in the following provinces: Warsaw (from 29.6 to 54.7 percent) and Olsztyn (from 14.9 to 36.6 percent of plants affected). A decline in the prevalence of the pest compared with the preceding year was observed in Biala Podlaska (from 51.2 to 11.9 percent) and Chelm (from 48.1 to 22.9 percent of plants affected).

For 1984, the occurrence of the pest on winter rape fields is likely to increase slightly or remain at previous year's level and the degree of actual damage will depend on weather conditions. If weather conditions reduce the flowering period and the mass appearance of beetles will be delayed, the pest may induce less damage. Major damage should develop on rape fields in western, southwestern, southeastern and eastern parts of the nation, and in Elblag, Olsztyn and Warsaw Provinces.

#### Pod Pests

Cabbage Seapod Weevil  
*Ceutorrhynchus assimilis* Payk

Cabbage Midge  
*Dasyneura brassicae* Winn.

In accordance with last year's forecast, an increase in cabbage seapod weevil was observed. On average, 8.7 percent of pods were affected, compared with 6.9 percent in 1982. The regions where the damage was greatest

(a range of 16 to 19 percent) were the following provinces: Lomza, Bydgoszcz, Poznan and Zamosc. The zone exposed to considerable damage (10 to 15 percent) included the following provinces: Warsaw, Lodz, Bialystok, Gorzow, Kalisz, Leszno, Pila, Siedlce, Slupsk, Suwalki, Szczecin, Wloclawek and Zielona Gora.

The lowest level of activity of cabbage seedpod weevil was observed in the following provinces: Rzeszow, Krosno, Walbrzych, Plock, Konin and Bielsko-Biala (less than 4 percent of pods damaged).

Damage inflicted by *Dasyneura Brassicae* Winn. was estimated at 6.5 percent (compared with 5.2 percent in 1982). The greatest level of damage, surpassing 10 percent of pods, was reported in the following provinces: Zamosc (27 percent), Poznan (19), Gorzow (17.6), Bydgoszcz (11.6) and Szczecin (10.7 percent). In the remaining provinces, the damage to the pods by larvae of the cabbage midge varied on average from 1.5 percent (Siedlce) to 8.4 percent (Jelenia Gora). The forecasts of the development of these two pod pests in 1984 are unfavorable for rape fields. An analysis of multiannual development cycles of these species indicates a high probability of further increase in abundance and degree of damage.

Lin

Romuald Lewartowski, MSc

Lin rot

*Melampsora lini* Lev.

1983 was an exceptionally unfavorable year for lin rot. The disease did not produce major damage virtually anywhere. The average prevalence for Poland was 4.2 percent of plants damaged (compared with 6.9 percent in 1982). A higher level of the disease was observed in Zamosc Province, where, generally, 59.0 percent of plants were affected. This included 1.7 percent with severe form of disease, 4.1 percent with a medium degree and 53.3 percent to a weak degree. In Elblag Province, 13.5 percent of plants were diseased but most to a weak degree. A low prevalence of lin rot was reported in the following provinces: Bialystok (7.9 percent), Biala Podlaska (7.0), Gdansk (5.6) and Konin (4.9 percent of plants affected). Lin rot had the lowest prevalence on lin fields in the following provinces: Walbrzych, Wroclaw, Bydgoszcz, Czestochowa, Gorzow, Jelenia Gora, Katowice, Ostoleka, Rzeszow and Torun, where only 1 percent of plants exhibited signs of the disease.

In view of this situation in 1983, the forecasts for 1984 suggest that the disease can inflict significant damage only on areas where it had a high prevalence last year.

Tobacco

Romuald Lewartowski, MSc

Tobacco Blue Mold  
*Peronospora tabacina* Adam.

The average percentage of damaged plants was 1.4 percent, which is similar to the level of 1982. The disease did not produce any significant damage to potato plantations, except for a few provinces. In Biala Podlaska, 5.9 percent of plants were damaged but most to a weak degree. In the remaining provinces, the prevalence of the disease varied from 0.1 percent in Lublin to 3.5 percent in Plock.

In 1984, given conditions favorable to the development of the pathogen, the disease may appear with a higher incidence, primarily in the following provinces: Biala Podlaska, Bialystok, Rzeszow, Krakow, Plock, Zamosc and Suwalki.

*Lycopersicum virus 3* Smith

Nationwide, the occurrence of this virus has grown on tobacco fields. This was favored by weather conditions conducive to the growth of the vector of the disease. The average level for Poland was 16.6 percent of plants affected, compared with 3.3 percent in 1982. As usual, the disease was more intensive in the southeastern part of the nation. This included the following provinces: Zamosc (62.2 percent of plants diseased), Tarnobzeg (45.0), Kielce (44.4), Krakow (36.7), Tarnow (33.1), Chelm (23.8), Rzeszow (20.7), Lublin (15.1) and Przemysl (12.9). In the remaining provinces, the prevalence of the disease varied from around 0.5 percent in Czestochowa and Elblag to 4.1 percent in Radom and Plock Provinces.

A considerable growth of the disease on tobacco fields compared with 1982 was reported by the following provinces: Zamosc (from 3.9 to 62.2 percent of plants affected), Tarnobzeg (from 3.5 to 45.0), Tarnow (from 1.7 to 33.1), Kielce (from 20.4 to 44.4), Chelm (from 2.3 to 23.8), Lublin (from 3.4 to 15.1) and Rzeszow (from 12.0 to 20.7 percent of plants).

As in 1983, many of the tobacco fields, especially in the southeastern part of the nation, may be susceptible in 1984 to a major spread of this virus. Given a favorable warm and sunny weather condition, the disease may produce major damage.

Hop Crops

Romuald Lewartowski, MSc

Hop Aphid  
*Phorodon humuli* Schr.

Hop aphid was among the factors that locally presented danger to hop fields. The average number of winged aphids across the nation was 20.5 individuals per 100 leaves, compared with 46.6 in 1982. The highest abundance of winged aphids on hop crops was observed in the following provinces: Walbrzych (113.6 individuals), Gorzow (74.4) and Zamosc (36.0). Most affected were the follow-

ing regions: Swidnica (about 150 individuals per 100 leaves), Miedzyrzecz (about 70) and Tomaszow Lubelski (about 50).

The mean abundance of unwinged aphids nationwide was 348.9 individuals per 100 leaves (against 777.5 in 1982). The highest abundance on hops was observed in the following provinces: Lublin (576.5 ind/100 leaves), Zamosc (506.1), Zielona Gora (430), Walbrzych (337.0), Chelm (353.1) and Gorzow (346.5). The most affected regions included Tomaszow Lubelski (around 2000/100 leaves), Lubartow (about 1500), Opole Lubelskie (about 700), Swidnica (about 650), Krasnystaw (about 600), Krasnik (about 500), Lublin (about 450), Wolstyn (about 430), Bychawa (about 400), Gorzow (about 350) and Dierzoniow (about 300).

Surveys of the abundance of hibernating hop aphid populations in the winter of 1983-84 indicated a low prevalence of the pest. On the national scale, the average density of eggs per 10 cm of branch was 0.7 individuals. A higher figure was observed in the following provinces: Bielsko-Biala (3.7 per 10 cm of branch), Jelenia Gora (3.2) and Opole (1.2). The most affected areas included Zywiec (20 eggs), Luban (16) and Miechow (13.1).

In 1984, if the spring is warm and sunny, the pest can occur in large numbers, especially in the following provinces: Gorzow, Zielona Gora, Jelenia Gora, Bielsko-Biala, Walbrzych, Zamosc, Lublin and Chelm. The prevalence and degree of damage of aphids on the hop crops during the summer will be affected by the weather conditions. In the parts of the nation where warm weather will prevail with a low precipitation level, measures against the pest should be undertaken throughout the season, especially in June and July.

#### Hop Flea

*Psylliodes attenuata* Koch.

The occurrence of hop fleas was practically the same as in 1982, and amounted to 0.9 individuals per plant. The highest abundance of the hop flea was observed in the following provinces: Poznan (2.8 individuals per plant), Gorzow and Chelm (1.3), Lublin (1.2) and Biala Podlaska (1.1). In the remaining provinces, the prevalence of the pest ranged from 0.1 individuals/plant in Zamosc and Wloclawek Provinces to 0.9 in Zamosc Province [as printed]. In 1983, hop fleas were more widespread on hop fields in the following areas: Nowy Tomysl (5.5 individuals per plant), Bychawa (2.4) and Krasnystaw, Lublin and Hrubieszow (2.0).

At this point, it is difficult to project the prevalence of hop fleas. Preventive treatment should be based on the observations of the abundance of the bugs on the hop fields during the spring. In those areas where the weather is warm during the spring, attention should be given to hop flea prevention. If the weather conditions are favorable for its development, this pest can inflict substantial damage to hop plantations.

## Pests of Papilionaceous Plants

Franciszek Kagan, DSc

### Pea Aphid

*Acyrtosiphon pisum* Harris.

Migrations of the winged forms and development of colonies of unwinged aphids were observed at the end of the first weeks of May. The development of the pest took place in varied weather conditions. In many parts of the nation, the deficit of moisture in the soil (caused by protracted droughts and limited rainfall) results in a premature ripening of plants. Under such conditions, the aphids left the pea plants earlier, looking for less hardened plants. As a result, a generally low increase in aphid populations was observed in 1983 compared with 1982.

The national average for 19 provinces was about 21.3 percent of plants affected, including 8 percent to a strong or medium degree. The pest was most abundant in northern provinces, namely: Gdansk (41 percent of plants affected, including 2 percent to a medium and strong degree), Elblag (32 percent and 10 percent), Bydgoszcz (29.3 and 10), Olsztyn (29 and 12), Suwalki (25 and 9) and also Tarnobrzeg (29 and 15), Gorzow (29 and 11) and Zielona Gora (24 and 7).

With this long lead it is hard to predict the pattern of atmospheric factors in the coming vegetation season and its effects on the development of aphids. Given warm and moderately humid conditions, however, which is optimal, a strong proliferation of aphids is likely, resulting in considerable damage to papilionaceous plant crops.

### Spindle Tree Pea Moth

*Laspeyresia nigricana* Steph.

Pea moths on pea and bean plantations occurred locally at high levels. Based on registration data of the Plant Quarantine and Protection Service, the pest on surveyed plantations in 23 provinces was observed on an average of 25 percent of plants, including 14 to a medium and strong degree. The highest prevalence was registered in Zamosc Province (about 60 percent of sprouts affected, including 27 percent to a strong or medium degree) and also in Szczecin (55 and 35), Gdansk (54 and 42), Zielona Gora (about 52 and 27), Tarnow (34 and 31), Gorzow (33 and 14) and Elblag (33 and 16). In the remaining provinces, only three had the pest prevalence above 10 percent. In most provinces, pea moth thus affected a greater number of sprouts, which is considered the threshold of economic damage according to the Cammel-Vay classification (5 percent).

### Pea Moth

*Laspeyresia nigricana* Steph.

Our forecast for this species has been confirmed completely. In 1983, the proliferation of the pest never attained a high degree of abundance or damage. Although the development of the pest took place in favorable weather conditions,

the population did not exceed its 1982 level. An important factor was a high mortality of caterpillars in warm and dry soil in the summer of 1982. As a result, the number of individuals was greatly reduced. This was confirmed by the data on damage levels on surveyed fields in the vegetation season of 1983. The national level was 6.9 percent of pods (compared to 6.2 percent in 1982) affected.

As in previous years, the greatest damage was observed in 1983 in eastern and northern provinces. This included especially: Lomza and Ciechanow (about 21 percent of pods affected), Tarnobrzeg (15), Suwalki, Olsztyn, Bydgoszcz, Legnica and Piotrkow (about 11) and Bialystok, Chelm and Gdansk (over 8 percent).

The very dry weather that prevailed in the summer of 1983, especially at a time when the worms descend into the soil, bodes well for pea producers in 1984. The hibernating population of this pest is generally not large and does not present a major threat to seed plantations. A potential threat in 1984 would be extended to crops in eastern and northern provinces, as well as in Legnica and Wroclaw. There, a special program of protective measures will be necessary on sweet green bean plantations intended for harvesting in pods.

#### Clover Weevil *Apion apricans* Hbst.

In 1983, an increase in weevil prevalence was registered in most provinces where it was under surveillance. Nationwide, the percentage of affected flowering stems rose to 9 percent (compared with 7 percent in 1982). The greatest damage to clover fields was done by the pest in the following provinces: Lomza (20 percent), Bialystok (19), Ciechanow, Zamosc and Rzeszow (over 15) and Legnica (about 15). A weevil prevalence in the range of 10 to 14 percent was observed in five provinces: Lublin, Bydgoszcz, Suwalki, Chelm and Biala Podlaska.

In southeastern provinces, other species of the pest were observed locally: *Apion virens* Hbst. and *Apion seniculus* Kirby. We expect the gradational tendency of the weevil to be maintained through 1984. The eastern provinces seem to be most exposed to this pest.

#### Diseases and Pests of Vegetable Plants

##### Diseases of Vegetable Plants

###### Aldona Melosik

##### Potato Blight on Tomatoes *Phytophthora infestans* DB.

The vegetation season of 1983 was the second season in a row characterized by protracted soil drought. It did not favor the development and spread of potato blight on outdoor tomato plantations. The average degree of damage was maintained at the level of 1982, and nationwide hardly reached 4 percent.

It was by almost 17 percent below the multiannual average for 1975-82.

A relatively higher level of tomato disease was observed in southeastern provinces, where rainfall during the summer of 1983 was normal or above normal. The Plant Protection Service registered there from 6 to almost 26 percent of vegetables affected by the disease. In the remaining provinces (except for local deviations), the disease had virtually no economic significance.

In the vegetation season of 1984, an increase in the prevalence of the disease should be expected, which will largely depend on weather conditions and mainly precipitation.

#### Downy Mildew on Onions

*Peronospora destructor* (Berk.) Casp.

The first occurrences of downy mildew on seed onions in the vegetation season of 1983 were observed in the southeast between the 10th and 20th of May. First gray-purple mycelium and mildew were seen on flower stems about 10 days after the first signs of the disease. According to data supplied by the Plant Protection Service, the highest prevalence on onion fields was recorded in the following provinces: Gdansk, Elblag, Suwalki, Siedlce, Radom, Krakow, Rzeszow, Zamosc and Krosno, where the number of affected onion plants ranged from 38 to over 56 percent. The national average was around 20 percent of plants, which, compared with the preceding year, and the multiannual average for 1975-82, indicate a drop of about 6 percent.

Given unfavorable weather conditions and an early appearance of the infection on biannual onion plants, in the coming vegetation season an increase in the prevalence and damage from downy mildew is expected.

#### Angular Leaf Spot on Cucumbers

*Pseudomonas lachrymans* (Smith et Bryan) Carsner

In the past vegetation season, an increase of this disease on cucumber fields was observed by 4.6 percent, as compared with 1982. The national average was 22.9 percent, that is, 1.5 percent below the multiannual average for 1975-82.

The highest levels were observed in the southeastern provinces, as well as Radom, Siedlce, Warsaw, Ciechanow, Suwalki, Gdansk and Szczecin, where from 30 to 72 percent of cucumber leaves were affected by the disease. In central provinces and some of the southern provinces, as well as Gorzow, Lomza and Tarnobrzeg, the observations on cucumber leaves indicated the lowest level, ranging from 4 to 14 percent.

In the coming vegetation season, the disease is most likely to develop on cucumber fields in the provinces where its high prevalence was registered last year. The actual level of the disease will be determined by the weather conditions during the vegetation season.

Common Mildew on Cucumbers  
*Erysiphe polyphaga* Hamm.

Weather conditions in the vegetation season of 1983 were generally favorable for the development of this mildew, especially the species thriving on cucumbers. The occurrence of *Erysiphe polyphaga* Hamm on cucumber fields varied across the country. In southeastern provinces and Skierniewice, Warsaw, Poznan, Torun, Szczecin and Gdansk, the highest levels were recorded, with 28 to almost 53 percent of cucumber leaf surfaces affected by the disease. Its lowest incidence (from 3 to 9 percent of leaf surfaces) was reported in the following provinces: Gorzow, Zielona Gora, Legnica, Czestochowa, Seradz, Plock, Ciechanow, Ostroleka, Lomza and Bialystok. The national average was around 19 percent, which was the highest for the past eight years; an increase of the disease by almost 12 percent was observed compared with 1982.

A reliable forecast for 1984 is difficult. The prevalence of the disease and the degree of damage will be determined by the weather conditions during the vegetation season of 1984, especially by the air temperature and humidity.

In addition, in the past registration period, high prevalence of mildew was registered in most provinces on parsley and carrots (*Erysiphe heraclei* DC. ex Saint Aman). On the national scale, about 52 percent of plants were affected, especially (from 70 to 100 percent) in southwestern provinces and also in Przemysl, Siedlce, Lodz, Konin and Pila Provinces.

In most of the country, dry rot of tomato was observed on about 6 percent of fruits, even though this did not have a major economic effect. Celery septoriosis (*Septoria apii graveolentis* Dorogin and *Septoria apii* Chester) was observed at a high level in Koszalin (42.5 percent) and Slupsk (70 percent of plants affected) Provinces.

Pests of Vegetable Crops

Franciszek Kagan, DSc

Cabbage Aphid  
*Brevicoryne brassicae* L.

In the past vegetation season, the weather more often was favorable to cabbage pests than it was to the plants. Long periods without rain, combined with high temperatures, were conducive to increased dynamics of insect proliferation. This growth was particularly fast in eastern and southeastern provinces. On some of these agricultural areas, however, there were more frequent rains and a shortage of moisture was smaller than in other parts of the nation.

Cabbage aphid was from the very beginning of the vegetation period the most damaging of other pests for 1983. The importance of this damage can be measured by the fact that its abundance doubled from 1982 levels. On average, 57 percent of plants were infected nationwide, including 30 percent to a medium

or strong degree. The abundance of the pest continued almost throughout the vegetation season. This involved major efforts and expenditure on the part of producers for regular protective treatment.

The biological activity of cabbage aphids was particularly high in the following provinces: Siedlce (about 93 percent of plants affected, including 70 percent to medium or strong degrees), Wloclawek (87 and 41), Warsaw (about 80 and 60), as well as in Opole, Zamosc, Wroclaw, Poznan, Pila, Nowy Sacz, Krosno, Gorzow, Gdansk and Lodz Provinces (everywhere over 70 percent of plants). In most other provinces, the abundance of aphids ranged from 30 to 70 percent. A reflection of the high level of infestation in the vegetation season is the data available thus far on the number of hibernating eggs. It has been established that in many provinces a substantial increase in the number of eggs is observed. The highest levels of eggs of the pest have been thus far recorded in the following provinces: Warsaw (about 530 eggs per 10 cabbage stumps), Walbrzych (332), Kielce (280), Katowice (256), Wloclawek and Biala Podlaska (over 200). Relatively high numbers of aphid eggs were also observed in the following provinces: Plock (185), Suwalki and Bialystok (over 160), Leszno (150) and Legnica and Skierniewice (around 110). On the national level, an increase in the number of hibernating eggs was observed, from 55 in 1982 to 86 in 1983.

There is therefore a potential serious danger to cabbage crops from infestation by this aphid. The hazard is emphasized by the favorable conditions for pest development in the new vegetation season.

#### Imported Cabbage Worm *Pieris brassicae* L.

As has been mentioned, the imported cabbage worm was more prevalent in eastern Poland. The highest level of damage was inflicted by this pest in the following provinces: Zamosc (about 67 percent of plants affected, including 14 percent to a strong degree), Bialystok (60 and 11), Suwalki (53 and 5), Siedlce (48 and 6), Lublin and Lomza (20 and 5), Pila (29 and 2), Ostroleka and Wroclaw (about 27) and Elblag (about 26). The national average was about 18 percent of plants affected (compared with 16 percent in 1982). The relatively small increase of the national average in the pest prevalence was due to a drastic drop of imported cabbage worm abundance in western and central provinces.

A study of the condition of the pest population indicated that most viable worms and pupae have been observed in the following provinces: Gdansk and Wloclawek (about 74 percent of the entire population), Bydgoszcz, Walbrzych and Warsaw (over 60 percent), Kielce, Pila and Czestochowa (over 50 percent) and Slupsk, Suwalki, Tarnobrzeg, Radom and Gorzow (over 40 percent).

For 1982, we foresee further increase in the prevalence of the pest in eastern provinces and in those provinces where the pest exhibited the lowest level of activity against the background of medium levels of damage.

### *Barathra brassicae* L.

In 1983, the prevalence of this pest remained unchanged, amounting to over 14 percent of plants affected nationwide. In individual provinces, the damage done by the larvae varied from 3.6 percent in Plock to 66 percent in Zamosc. Of these, 3.3 percent of plants were damaged to medium or strong degrees. Largest numbers of damaged cabbage and cauliflower plants were registered in Zamosc Province, and also in the following provinces: Lodz (52 and 6), Warsaw (35 and 17), Piotrkow (25 and 11), Bydgoszcz (25 and 5), Elblag (22 and 4) and Bielsko-Biala (21 and 12). In most provinces, on average, 10 to 20 percent of plants were infected with the pest.

In the past few years, the population of this pest has grown so fast that every year it presents a major threat, especially to cabbage crops.

For 1984, we do not expect an improvement in the situation and project a further growth of the economic damage from this pest. Most exposed to it are crops located in eastern and central regions, especially those mentioned above.

### Cabbage Maggot

*Hyalemyia (Phorbia) brassicae* Bche.

Generally, across the nation, cabbage maggots do not do much damage. On controlled plantations, on average 7 percent of plants were affected. In a number of provinces, however, cabbage maggots exhibited a relatively high abundance. This concerns especially the following provinces: Bydgoszcz (where on average 28 percent of plants were infested), as well as Elblag, Katowice, Pila, Poznan, Walbrzych and Suwalki (ranging from 10 to 13 percent of plants). The degree of damage was largely controlled by protective treatments performed annually by vegetable growers. Otherwise, cabbage maggots would have inflicted much more serious damage in all areas of the country.

For the 1984 vegetation season further antipest measures will be necessary. This is especially important, because the treatments at the same time protect the plants from other important pests--*Ceutorhynchus pleurostigma*, *Ceutorhynchus quadridens* and *Baris* sp.

### Carrot Rust Fly

*Pella rosae* Fabr.

Carrot rust fly, which currently is the most serious fly on carrot fields, in 1983 produced relatively less damage than the year before. According to data from 24 provinces, the average of 7 percent of plant roots were damaged (as against 8 percent in 1982). The spread of the pest dropped especially in the areas of its previous high abundance. For instance, in Poznan Province (from 20 to 4.6 percent), Piotrkow (from 18 to 13.3) and Lodz and Suwalki (from 12 to 7). In other parts of the nation, however, a high abundance of the pest was maintained. Here one should make special mention of the following provinces: Gdansk (on average, 30 percent of roots damaged), Lublin (14.3), Wroclaw (12), Koszalin (11), Warsaw (10) and Kalisz (9).

The decreased damage done by carrot rust fly in 1983 was due (especially in the belt of Great Valleys) to weather conditions. An extremely hot summer and drought resulted in the drying out of eggs deposited in the soil and the death of hatching larvae before they penetrated the carrot roots. The population of the pest for 1984 has also decreased as a result.

The repetition of such weather conditions during the 1984 vegetation season is unlikely. We therefore believe that the existing numbers of carrot rust fly is sufficient to produce substantial damage to crops if weather conditions are favorable for it.

#### Onion Maggot *Phorbia antiqua* Meig.

As in previous years, onion maggots did not do major damage to the crops in 1983. This was a result of the preventive treatment of seeds and onions before sowing (planting) in the spring. These results indicate continued efficacy of recommended pesticides. A failure to apply them would result in a fast massive growth of the pest, inflicting major damage to onion crops.

On a national scale, the controlled plantations indicated an average of 5 percent of infested plants. The maggots have inflicted relatively significant damage in the following provinces: Szczecin (destroying about 17 percent of plants), Skierniewice (about 14), Bydgoszcz (about 9) and also in the following provinces: Przemyśl, Włocławek, Leszno, Gdańsk and Białystok (from 6 to 7 percent).

In 1984, onion growers should continue to treat seeds against onion maggots. This is the most efficacious method for fighting this pest.

#### Diseases and Pests of Orchards

##### Apple Tree Diseases

Walenty Babilas, DSc

##### Apple Scab *Venturia inaequalis* (Cooke) Aderh.

In the vegetation season of 1983, the apple scab prevalence was relatively high, with a large variation depending on the region. The national average was about 22.5 percent of apple tree leaves affected and 17 percent of fruits. Compared with the multiannual data, 1983 was a year with a medium level of apple scab prevalence. A distinctly higher spread of the disease was observed only in 1980 and 1981.

Because there exists a clear correlation between the signs of the disease on apple tree leaves and fruits, we consider in detail the latter indicator, which is essential for evaluating the damage done by apple scab. Relatively larger proportions of fruit damaged by the disease (namely, over 20 percent)

were registered by the Plant Protection Services of the northern provinces and partly also eastern provinces, as well as Wroclaw and Bielsko-Biala. In central provinces and in Gorzow, Leszno, Legnica and Tarnow, the lowest proportion of fruits were diseased (below 10 percent). Regardless of the proportion of affected fruits, the degree of the disease was mostly low, meaning that less than 3 percent of the fruit surfaces were covered by the scab. It should be pointed out, however, that an apple that is even slightly affected by the scab cannot be stored and thus loses its commercial value, which is especially important for winter varieties. The relatively low prevalence of apple scab in apple orchards in central areas and some of the western and southwestern parts of the nation should be attributed to low precipitation in the summer months of 1983.

Multiannual statistics indicate a close correlation between average monthly air temperatures in December and January and the prevalence of apple scab in the subsequent vegetation season. In those years when the monthly average temperatures in December and January were around 0°C or higher, the scab was much more widespread than in the years when December and January were frosty months. In view of this fact, in the coming vegetation season we should expect an increase in the prevalence and degree of damage of apple scab throughout the country. The affected areas of leaves and roots will certainly differ in different parts of the nation, depending on local weather conditions. A decisive influence on the spread of the disease will be exercised by rainfall and especially frequency of rains during the initial scab infection, that is, in April and May. However, the last two vegetation seasons have shown that despite apparently unfavorable conditions for development of apple scab during long dry periods in the summer months, the degree of spread of the disease on apple leaves and fruits was relatively high. This is illustrated, for example, by the Poznan region, where during the 1983 vegetation season (despite a large rainfall deficit) 16 periods critical for spread of the infection took place.

The Plant Protection Service and commercial orchard owners should be prepared for implementation of the complete program for fighting this dangerous fungal disease of apple trees, observing the signals as to the correct timing of preventive treatment operations.

#### True Apple Mildew

*Podosphaera leucotricha* Salm.

In the vegetation season of 1983, major differences in the prevalence of the true apple mildew were observed among different parts of the nation, ranging from 1 to 2 percent (Koszalin, Lomza and Slupsk Provinces) to almost 50 percent of branches affected (Przemysl Province). A low prevalence of the disease (less than 10 percent of branches with signs of apple mildew) were registered by the plant protection services in the southeastern, partly central provinces, including Slupsk, Koszalin, Leszno and Nowy Sacz. The apple orchards of 13 provinces had a 20 percent prevalence of mildew, mostly in Przemysl Province (about 50 percent), Wroclaw and Kielce (37 to 39), Rzeszow (about 32) and Walbrzych and Radom (about 27).

True apple mildew had a moderate level of prevalence (from 10 to 20 percent). The average for the nation was about 15 percent, that is, about 5 percent below the level of the previous year. Over the past four years, a gradual increase in the prevalence and degree of damage of true apple mildew has been observed almost throughout the nation, except for the southeastern macroregion.

For the coming year, the forecast as to the prevalence and degree of damage of true apple mildew is unfortunately unfavorable. The hibernation conditions of *Podosphaera leucotricha* fungus have been favorable. The abundance (reserves) of primary sources of fungal infection in apple orchards are not likely to be reduced by low winter and early spring temperatures, which could kill the initial mycelium growth (from -20°C to -15°C). We have therefore to expect a growth of the disease almost throughout the country. Most affected will be the apple orchards and particularly the susceptible apple tree varieties in the provinces which already registered a high prevalence of the disease in the past year, specifically: Przemysl, Kielce, Wroclaw, Warbrzych and Rzeszow Provinces. In the southeastern region, no major increase of true apple mildew is expected.

#### Diseases of Pear Trees

Walenty Babilas, DSc

##### Gray Mold Rot on Pears

*Botrytis cinerea* Pers.

Gray mold rot in 1983 was observed at a low level of prevalence in pear orchards, affecting about 5 percent of fruits nationwide. In the Krosno area, however, the disease produced significant losses, destroying about 25 percent of total harvests. From 9 to 16 percent of losses were registered by the plant protection services in a further number of provinces, namely: Ciechanow, Gorzow, Opole, Ostroleka, Piotrkow, Torun and Wroclaw. In the remaining provinces, the prevalence of gray mold rot on pears had no major economic significance.

For the coming year, a reliable forecast is difficult to make, because the abundance and damage of the gray mold rot will depend on weather conditions during the flowering and fruition season. Rainy weather in that period could produce an epidemic of the disease with serious losses of the fruit yield. The plant protection services and orchard managers should be prepared for preventive chemical treatment against the gray mold rot on commodity plantations.

#### Raspberry Diseases

Walenty Babilas, DSc

##### Raspberry Sprout Wilting

*Didymella applanata* (Niessl.) Sacc.

Data on increased wilting of raspberry bush sprouts on productive plantations have been received from 19 provinces. A high level of the disease on raspberry plantations was reported especially in the following provinces: Zamosc (about 75 percent of sprouts), Rzeszow (about 50), Krakow (40), Przemysl and Warsaw (35 and 37) and Lublin (about 30). In the remaining provinces, where raspberry is grown, the incidence of this disease was significantly lower. An average from 4 to 24 percent were reported there, with the lowest figures in the following provinces: Tarnow, Lomza, Bialystok and Plock.

It is likely that in the coming vegetation season *Didymella applanata* (Niessl.) Sacc. will be one of the most serious fungal diseases on raspberry plantations. Generally we expect an increase in this disease nationwide. Most affected by the pathogen will be raspberry plantations in the following provinces: Krakow, Lublin, Warsaw, Rzeszow, Przemysl and Zamosc.

#### Apple Tree Pests

Franciszek Kagan, DSc

##### Mites

*Tetranychidae* - hibernating in the egg phase on apple trees

This pest has been a major threat to apple tree orchards over the years, and the same is true for the vegetation season of 1983. The abundance of the mite population was determined largely by the weather, which was conducive to intensive development of the pest. In many parts of the nation, a relatively high prevalence of the mite was reported. Mites were most abundant in orchards located in the northern and eastern provinces. A higher degree of damage inflicted by the pest was registered in the following provinces: Czestochowa, Opole, Kalisz, Leszno, Konin and Pila.

Observations on apple tree branches have indicated that currently about 14 individual eggs per 10 cm of branch length hibernate in the orchard. Although the number of eggs is lower than in a similar period for 1982 (17.3 eggs), this is a sufficient reserve of the pest to produce major damage to orchards. In particular, the development of buds and later leaves could be affected seriously, given optimal weather conditions. Attention of horticulturists should be focused on the existing danger, especially in provinces where the population of mites is highest. This includes the following provinces: Skierniewice (79 eggs per 10 cm), Siedlce and Bialystok (about 33), Nowy Sacz (28), Warsaw and Czestochowa (over 27), Tarnobrzeg (23), Wroclaw (21), Kielce (19), Ostroleka (18), Sieradz (17) and Piotrkow (about 16).

##### Apple Aphid

*Aphis pomi* Deg. and other species

The development of the insect generally took place in favorable weather conditions, and the plant protection services reported in mid-April of 1983 a fast increase in the abundance of the aphids. They were observed in highest numbers in the following provinces: Opole, Leszno, Katowice, Gorzow, Jelenia

Gora, Pila, Slupsk, Gdansk, Olsztyn, Bialystok, Plock, Ciechanow, Warsaw, Przemysl, Zamosc, Chelm, Legnica and Wroclaw.

In most of these provinces, the 1983-84 winter evidenced the highest number of the pest reserves. Currently, the highest number of hibernating eggs were reported in the following provinces: Bialystok (8.7 per 10 cm of branch length), Jelenia Gora and Chelm (around 4), Kielce (3), Gorzow (2.4), Szczecin (1.9), Leszno, Legnica, Olsztyn, Tarnow and Wroclaw (about 1.5). In many provinces, these numbers were not large and did not exceed 0.5 eggs per 10 cm of branch length. As a result, the national average has declined to about 1.1 eggs per 10 cm branch length.

The threat to apple trees will increase given warm and moderately humid weather during the initial period of aphid development.

#### Apple Psylla

*Psylla mali* Schmidb.

The larvae hatched en masse and everywhere between April 20 and 30. In that period, the pest had the highest prevalence in the following provinces: Przemysl, Lublin, Krosno, Gdansk, Jelenia Gora, Bydgoszcz, Olsztyn, Elblag and some others. In most provinces, the apple psylla was observed in relatively small numbers, which is confirmed by observations done in the fall on the abundance of eggs. It has been established that the national average for the number of eggs has greatly decreased compared with 1982 to the current level of about 5 eggs per 10 cm of branch length. This, however, does not abolish the fact that in some provinces the level of threat is still high. This concerns primarily the following provinces: Kielce (about 24 eggs per 10 cm have been observed), followed by Zamosc (14.3), Gdansk (13.4), Wroclaw (11.6) and Bialystok, Radom and Jelenia Gora (about 8).

#### Apple Weevil

*Anthonomus pomorum* L.

The increase in the prevalence of apple weevil larvae in 1983 that had been expected was in fact registered by the observation services in most provinces. The highest levels of the pest were observed in eastern, northern and southwestern provinces. Most danger was caused by the apple weevil in orchards in Krosno (over 31 percent of flower buds affected), Przemysl (22), Rzeszow (17), Zamosc (15), Wroclaw (13), Zielona Gora and Kielce (12), Ciechanow, Czestochowa and Szczecin (about 11) and Wloclawek and Biala Podlaska (about 10).

In the coming vegetation season, we expect further increase of this apple tree pest. While the number of the insects will be increased, the quantity of flower buds will be decreased. This will concern primarily the apple tree varieties that had strong yields last year and will produce a smaller number of flower buds in 1984. The pest is likely to produce the most damage in the above-mentioned areas.

Small Ermine Moth  
*Hyponomeuta malinellus* Zell.

In 1983, no increase in the prevalence of this pest was registered. The larvae were observed in increased numbers only in unprotected orchards in eastern provinces and also in Kalisz, Piotrkow, Skierniewice, Jelenia Gora and Sieradz. The number of hibernating larvae has also dropped (although not significantly) to 0.4 egg hatches per 1 m of branch length. In some provinces, however, large numbers of hatches have been observed. In Kalisz, about 5 per 10 m, Szczecin (2.7), Kielce (1.5), Czestochowa (1.1), Leszno and Legnica (about 1.0) and Konin, Bialystok, Zielona Gora and Poznan (about 0.5).

In these regions (although only locally), small ermine moths may have economic significance for apple growers in the coming vegetation season.

Oriental Fruit Moth  
*Laspeyresia pomonella* L.

In the vegetation season of 1983, a substantial increase of the oriental fruit moth in apple orchards of many provinces was observed. In the controlled orchards, a national average increase of about 10 percent of crops damaged (compared with 6 percent in 1982) was reported. The moth flights and egg laying, as well as incubation period, took place in favorable conditions. Prolonged periods of hot and moderately humid weather (in eastern and southwestern provinces) also increased the reproductive potential of the fruit moth. As a result, in many provinces the damage inflicted by this pest was much higher than the national average. Most fruits affected were observed in southwestern and eastern provinces, and especially in Opole (over 26 percent), Wroclaw (about 22), Zamosc (over 16), Lomza (over 15), Katowice (15), Przemysl (15), Wloclawek, Elblag, Siedlce and Zielona Gora (13) and Suwalki, Chelm and Bielsko-Biala (about 12).

In 1984, the forecast for apple orchards is even less favorable. A relatively high reserve of hibernating larvae and the expected limited fruition create serious threats from oriental fruit moths. The degree of damage is expected to rise in orchards all over the nation, especially in the southwestern provinces and areas east of the Wisla.

Pests of Plum and Cherry Trees

Lucyna Grendowicz, MS

Plum Moth  
*Laspeyresia fanebrana* Tr.

Observations have established that in 1983 there was a considerable growth in the damage inflicted by this pest. The average damage to fruit on a national scale was 13.4 percent, that is, 6.7 percent higher than in the previous year, and 3.9 percent higher than the multiannual average.

The increase in the abundance of plum moth was particularly great (compared with the previous year) in the following provinces: Lodz (from 11.9 to 38.8 percent of fruits affected), Przemysl (from 15.4 to 34.9), Walbrzych (from 3.7 to 23), Opole (from 10.2 to 28.3), Zamosc (from 7.7 to 22.2), Wroclaw (from 12.4 to 25.7), Kielce (from 5.2 to 17.9), Rzeszow (from 11.8 to 23.5), Radom (from 4.9 to 15.9), Elblag (from 5.5 to 16) and Wloclawek (from 7.1 to 15.7). A relatively high degree of damage was also observed on the territories of the following provinces: Bielsko-Biala (22.2 percent), Bialystok (26), Walbrzych (23), Chelm (15.5), Krakow (15.4) and Szczecin (15), as well as in Nowy Sacz, Zielona Gora, Katowice, Siedlce, Tarnow, Leszno, Konin, Tarnobrzeg, Poznan and Skierniewice Provinces, where in control orchards from 10 to 15 percent were infected by the worms. A small drop in the prevalence of the pest was reported from Gorzow and Plock Provinces.

In the coming year, the threat will be the greatest to plum trees in those areas where the plum moth had the highest prevalence last year.

#### Sawfly

*Hoplocampa minuta* Christ.

*Hoplocampa flava* L.

Observations in 1983 indicated that 8.1 percent of fruits were affected by the sawfly as a national average. This number was somewhat higher than the preceding year. A considerable drop in the abundance of plum sawflies was observed in the following provinces: Zamosc (from 19.2 to 6.6 percent of fruits affected), Bydgoszcz (from 23.7 to 13.6), Piotrkow (from 10.6 to 5.8) and Siedlce (from 9.5 to 6.9).

A higher degree of damage to plums was done in the following provinces: Skierniewice (29 percent affected), Suwalki (24), Elblag (19.9), Wloclawek (18.8), Szczecin (17.7), Slupsk (14), Bydgoszcz (13.6), Wroclaw (13.4), as well as Bialystok, Pila, Gorzow, Poznan, Zielona Gora and Koszalin, where the number of plums affected varied from 10 to 13 percent.

In 1984, it should be expected that the zones of greatest hazard will be those where a large degree of damage to plum buds was observed in the previous year.

#### European Fruit Lecanium

*Lecanium corni* (Bche.) March.

As in the preceding years, the prevalence of hibernating larvae of the European fruit lecanium on plum branches was not high. The national average, as in the previous year, was 1.3 individuals per 10 cm of branch length.

A minor increase of the number of larvae compared to the previous year was observed in the following provinces: Nowy Sacz (from 10.1 to 13.9 individuals per 10 cm of branch length), Bielsko-Biala (from 0.7 to 3.7), Leszno (from 0.7 to 2.2), as well as in Czestochowa and Tarnobrzeg Provinces.

In certain parts of the nation, the abundance of hibernating larvae on plum trees was particularly great, namely, in: Nowy Sacz (32.4 individuals per 10 cm of branch length), Sucha Beskidzka (18), Bochnia (15), Limanowa (9.2), Biskupiec (8.8) and Opatow (6.1). In these areas, special attention should be paid to this pest in the vegetation season of 1984.

**Mealy Plum Aphid**  
*Hyalopterus pruni* Geoffr.

The number of eggs of mealy plum aphids during the winter on plum trees was low, as in previous years. On the national scale, the average number of eggs of mealy plum aphids during the winter on plum branches was low and did not exceed 0.5 eggs per 10 cm of branch length.

Observations at the end of the fall and the beginning of the winter of 1983 indicated that most provinces had a low prevalence of the pest. In some localities, however, the density of mealy plum aphid eggs on plum tree branches was high. These were the areas of Milicz (8.5 eggs per 10 cm of branch length), Hajnowka (6.5), Olsztyn (5.1), Zywiec (3.6) and Olesnica (3.6).

**Black Cherry Aphid**  
*Myzus cerasi* F.

For many years, the number of black cherry aphid eggs in winter on cherry trees has been low. In the winter of 1983-84, the national average density of black cherry aphid eggs was 0.4 eggs per 10 cm of branch length. Observations have determined that in most provinces large numbers of eggs have been laid on cherry trees. The increase in the hibernating population was reported by the following provinces: Wroclaw, Katowice, Bielsko-Biala, Koszalin.

In some parts of the nation, a high density of eggs was observed in the winter, namely in the areas of Strzelin (Wroclaw Province; 3.1 eggs per 10 cm branch length), Trzebnica (3), Zywiec (Bielsko-Biala Province; 2.7), Buska Zdroju (Kielce; 2.5), Tuchow (Tarnow; 2.3), Grudziadz (Torun; 2.2), Gora (Lodz; 2), Raciborz (Katowice; 1.9), Goleniow and Pyrzyce (Szczecin; 1.7) and Mysliborz (Gorzow; 1.6).

It can be expected that black cherry aphid in the coming vegetation season will not be a major threat to cherry orchards.

**Cherry Fruit Fly**  
*Rhagoletis cerasi* F.

As in previous years, data on the prevalence of cherry fruit flies were reported by only eight provinces: Warsaw, Kalisz, Lublin, Pila, Piotrkow, Radom, Walbrzych and Zielona Gora.

Compared with the previous year, the prevalence of the pest has dropped slightly, with the national average level of 0.8 percent of fruits affected. The increase in the pest was observed in Lublin Province from 3.8 to 4.9 per-

cent of fruits affected, while a small drop in its occurrences was registered in the following provinces: Warsaw (from 2.5 to 2.0 percent of fruits affected), Piotrkow (from 0.3 to 0.0) and Kalisz (from 1.1 to 0.9). An analysis of the soil under the crowns of the cherry trees indicated that the density of hibernating pests was low, as reported from the following provinces: Lublin, Gorzow, Kalisz, Konin and Opole.

#### Field Rodents

Anna Romankow-Zmudowska, DSc

##### Field Vole

*Microtus arvalis* Pall.

In the spring of 1984, rodents were observed in smaller numbers than in the similar period of the previous year. This was a result of dry weather in the fall, followed by unusually high precipitation in the winter in the south and east of the country, as well as floods in the south.

In 1983, of the areas under papilionaceous plants and cereals, 57 percent were infected by the rodents in the spring, 60 percent in summer and about 64 percent in the fall. A similar level was observed in orchards.

An increased density of vole holes upwards of 100 openings per 1 ha was registered in 35 districts across the nation. The largest numbers, an average of 1500 to 1900 openings, were observed locally in Bielsko-Biala, Katowice and Krosno Provinces.

The fast growth of plant mass since May resulted in a gradual increase of the rodent population during the summer. After harvesting, average densities of rodent nests upward of 400 openings per 1 ha were observed in 14 percent of districts. The highest levels with an average of 1500-2800 openings per 1 ha have been observed in five districts in Bielsko-Biala, Katowice and Opole Provinces.

The warm and dry weather prevailing in September was not favorable for excessive proliferation of rodents. An increase in the number of inhabited holes was observed after an improvement of vegetation conditions in October. Upwards of 400 openings per 1 ha were recorded in 22 percent of districts.

Proliferation of rodents continued through the end of October. Openings densities from 1,500 to 3,500 per 1 ha were reported in the following provinces: Krakow, Bielsko-Biala, Katowice, Kielce, Opole, Przemysl, Skierniewice, Tarnow, Walbrzych and Zielona Gora; the highest levels were observed in Bielsko-Biala, Opole, Tarnow and Zielona Gora.

An increased abundance of the pest in the fields, given favorable agrometeorological conditions during the winter and spring, could lead to a growth of rodent population in 1984.

## DEVELOPMENT OF SOCIALIZED SECTOR OF AGRICULTURE TO 1980

Belgrade GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA in Serbo-Croatian Nos 7-8, Jul-Aug 84 pp 18-24

[Tables excerpted from article by Dr Josip Defilippis]

[Text] Table 1. Number of Socialized Farms Over the Period 1950-1979

Type of Farm	1950	1955	1960	1965	1970	1975	1979
Corporate farms and combines	858	914	475	292	270	868	2,588
Peasant cooperatives	6,913	688	147	10	--	--	--
General agricultural cooperatives	8,004	6,066	4,086	1,936	1,102	840	598
Other farms	10,355	698	412	330	554	654	--
Total	26,130	8,366	5,120	2,559	1,924	2,362	3,186

Sources: SGJ [Statistical Yearbook of Yugoslavia], 1965-1981.

Table 2. Arable Land in the Socialized Sector Over the Period 1950-1980

Type of Farm	1950	1955	1960	1965	1970	1975	1980
Corporate farms and combines	276	404	477	780	975	1,118	1,410
Peasant cooperatives	1,589	212	120	23	--	--	--
General agricultural cooperatives	13	97	373	458	321	210	43
Other farms	447	111	63	44	77	80	--
Total	2,326	824	1,033	1,305	1,373	1,408	1,453

Sources: STATISTICKI BILTENI SZS [STATISTICAL BULLETINS OF THE FEDERAL BUREAU OF STATISTICS], Nos 393, 988 and 1,177; and SGJ, 1981.

Table 3. Land Purchases Over the Period 1960-1979

<u>Period</u>	<u>Total</u>	<u>Socialized Farms</u>	<u>Agricultural Cooperatives</u>
Total purchased			
1960-1964	308,623	127,717	180,906
1965-1969	114,082	76,089	37,993
1970-1974	56,773	37,624	19,149
1975-1979	57,757	50,570	7,187
Annual average			
1960-1964	61,724	25,543	36,181
1965-1969	22,819	15,218	7,598
1970-1974	11,355	7,525	3,830
1975-1979	11,551	10,114	1,437

Sources: Statistical bulletins Nos 293, 559, 1,115 and 1,233.

Table 4. Leasing of Land Over the Period 1960-1979, in hectares

<u>Period</u>	<u>Average Leased Per Year</u>	<u>Socialized Farms</u>	<u>Agricultural Cooperatives</u>
1960-1964	100,249	17,392	82,857
1965-1969	44,961	16,791	28,170
1970-1974	32,074	17,990	14,084
1975-1979	36,180	29,317	6,863

Sources: Statistical bulletins Nos 293, 551, 1,115 and 1,233.

Table 5. Newly Developed Land Over the Period From 1960 to 1979

<u>Period</u>	<u>Total, ha</u>	<u>Socialized Farms</u>	<u>Agricultural Cooperatives</u>
Total newly developed			
1960-1964	107,948	51,851	56,097
1965-1969	37,831	22,846	14,985
1970-1974	22,777	20,362	2,415
1975-1979	28,248	26,628	1,620
Annual average			
1960-1964	21,589	10,370	11,219
1965-1969	7,566	4,569	2,997
1970-1974	4,555	4,072	483
1975-1979	5,650	5,326	324

Sources: Statistical bulletins Nos 293, 551, 1,115 and 1,233.

Table 6. General Survey of the Development of Agricultural Production, value in millions of dinars

<u>Indicators</u>	<u>1960</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Social product				
Total	33,331	38,702	45,288	51,018
Socialized sector	4,481	7,956	10,589	13,661
Private farms	28,849	30,746	34,699	37,357
Production index (1970 = 100)				
Total	82	100	115	128
Socialized sector	47	100	134	173
Private farms	92	100	111	118

In permanent 1972 prices.

Source: SGJ, 1981.

Table 7. Pattern of Landholding by Socialized Organizations

<u>Farmland, ha</u>	<u>Number of Organizations</u>			<u>Area of Farmland</u>		
	<u>1965</u>	<u>1975</u>	<u>1980</u>	<u>1965</u>	<u>1975</u>	<u>1980</u>
Socialized farms						
Less than 100	8.9	39.6	64.5	0.1	0.2	0.9
100-500	14.2	9.8	10.4	1.0	1.6	3.8
500-2,500	29.1	29.2	17.2	11.1	23.5	34.0
2,500 or more	48.8	21.4	7.9	87.8	74.7	61.3
Agricultural cooperatives						
Less than 100	44.2	56.2	77.4	3.0	2.6	8.9
100-500	35.9	25.4	18.1	18.3	14.0	30.6
500-2,500	16.9	19.4	3.7	40.5	54.9	36.2
2,500 or more	3.0	2.5	0.8	37.2	28.5	24.3

Source: SGJ, 1967, 1977 and 1981.

Table 8. Certain Indicators of the Adequacy of Equipment in the Socialized Sector

<u>Indicators</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>
Socialized farms					
Tractors, total	10,978	21,624	18,975	20,492	23,889
Combines	2,502	6,868	7,900	8,187	8,965
Hectares of arable land per tractor	43	40	55	58	58

Table 8 (continued)

<u>Indicators</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>
Total horsepower per 100 hectares of arable land	--	199	174	194	217
Cooperative organizations					
Tractors, total	18,953	18,716	8,427	5,031	1,227
Combines	2,270	4,425	3,989	2,859	687
Hectares of arable land per tractor	--	24	38	42	36
Total horsepower per 100 hectares of arable land	--	--	274	318	476

Source: Statistical bulletins Nos 293, 809, 1,233.

Table 9. Trend in Certain Important Production Operations, average for the periods

<u>Production Operation</u>	<u>1960-1964</u>	<u>1965-1969</u>	<u>1970-1974</u>	<u>1975-1979</u>
Socialized farms				
Wheat, thousands of tons	526	1,039	1,566	1,888
Corn, thousands of tons	410	869	1,107	1,388
Sugar beets, thousands of tons	860	1,620	1,969	3,443
Milk, thousands of tons	253,553	314,123	303,588	330,270
Meat, tons	99,960	161,414	299,508	599,028
Number of head of livestock, converted to standard	340,305	317,343	411,235	519,739
Cooperative organizations				
Wheat, thousands of tons	354	385	316	137
Corn, thousands of tons	360	281	174	90
Sugar beets, thousands of tons	403	345	270	203
Milk, thousands of tons	75,157	53,478	21,127	8,318
Meat, tons	56,981	53,845	42,622	37,875
Number of head of livestock, converted to standard	165,176	102,191	69,241	44,786

Source: Statistical bulletins Nos 657, 746, 809, 988 and 1,233.

Table 10. Trend of the Size of the Labor Force in the Socialized Sector

<u>Indicators</u>	<u>1959</u>	<u>1964</u>	<u>1969</u>	<u>1974</u>	<u>1979</u>
<b>Socialized farms</b>					
Total labor force	119,093	162,728	132,423	154,101	177,489
Workers in farming activity	103,101	120,990	96,306	112,608	129,608
Percentage in farming	86.6	74.4	72.7	73.1	73.1
Percentage of agricultural specialists	1.1	1.9	4.0	4.3	3.0
<b>Cooperative organizations</b>					
Total labor force	99,446	117,857	76,006	52,725	20,571
Workers in farming activity	68,678	86,755	40,903	24,734	8,284
Percentage in farming	39.1	73.6	57.8	46.9	40.3
Percentage of agricultural specialists	0.4	1.3	2.3	2.4	3.0

Source: Statistical bulletins Nos 657, 746, 809, 988 and 1,233.

Table 11. Certain Indicators of the Intensity and Productivity of Socialized Farms

<u>Indicators</u>	<u>1959</u>	<u>1964</u>	<u>1969</u>	<u>1974</u>	<u>1979</u>
<b>Value of fixed capital</b>					
Total, millions of dinars	6,296	13,012	23,111	31,250	40,325
Per hectare of arable land, dinars	7,146	10,253	17,086	22,337	28,124
Per worker, dinars	28,749	46,306	111,111	150,966	199,876
<b>Social product</b>					
Total, millions of dinars	4,407	6,844	8,931	11,196	13,564
Per hectare of arable land, dinars	3,002	3,393	6,601	8,003	9,445
Per worker, dinars	20,123	24,356	42,938	54,087	68,484

Source: Statistical bulletins Nos 657, 746, 809, 988 and 1,233.

7045

CSO: 2800/35

## EMPLOYMENT DATA IN SOCIALIZED SECTOR OF AGRICULTURE, FORESTRY

Belgrade GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA in Serbo-Croatian Nos 7-8, Jul-Aug 84 p 39

[Text] Within the total number of new workers hired in Yugoslavia, there has also been an increase in the number employed in agriculture and fishing, and then in forestry and water management, but the rates differed. The most recent figures of the Federal Bureau of Statistics, which are incomplete, show that there was the largest increase in the size of the labor force in the sector of agricultural production. The table below shows the trend of the size of the labor force in the socialized sector over the last several years (annual average in thousands):

<u>Sector-Branch</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Agriculture and fishing	187.7	191.4	200.4	210.2	218.0
Agricultural production	161.2	165.2	173.9	182.2	189.7
Agricultural services	22.6	22.4	22.7	24.2	24.1
Fishing	3.9	3.9	3.8	3.8	4.1
Forestry	62.2	61.7	63.2	65.2	65.8
Water management	17.3	17.3	17.9	18.3	19.0

Right up until 1980 the total size of the labor force in agriculture and fishing recorded a very mild increase—usually between 1,000 and 3,000 employees per year. Since 1980, however, when agriculture began to take an increasingly important place in the country's overall economic development, this number has usually been ranging at about 10,000 newly hired workers a year. The growth has been largest in the sector of agricultural production, very mild in agricultural services, and there has been stagnation in fishing. In forestry and water management uneven movements have been recorded with a tendency of a mild or very mild increase.

The total size of the labor force in the socialized sector (annual average) in 1982 was 210,224 workers in agriculture and fishing. The situation in the republics has been as follows:

<u>Sector</u>	<u>Bosnia- Hercegovina</u>	<u>Monte- negro</u>	<u>Croatia</u>	<u>Macedonia</u>	<u>Slovenia</u>	<u>Serbia</u>
Agriculture and fishing	14,593	2,233	45,714	34,110	12,348	101,226
Agricultural production	12,653	1,678	37,936	31,809	10,635	87,440
Agricultural services	1,688	501	5,824	1,994	1,433	12,799
Fishing	252	54	1,955	307	280	988
Forestry	24,298	2,999	15,850	3,666	7,632	10,796
Water management	1,653	88	6,110	2,240	1,690	6,564

Within SR [Socialist Republic] Serbia the largest labor force in agriculture and fishing in 1982 was in Vojvodina--61,241 workers, and then in Serbia proper--31,838 workers, and in Kosovo--8,148 workers. Work organizations in fishing in Vojvodina hired more workers (584) than in Serbia proper (224) and Kosovo (180) taken together. The largest labor force in forestry was in Serbia proper (7,232 workers), and in water management it was in Serbia proper (3,678) and in Vojvodina (2,436 workers).

It is interesting to emphasize with respect to the area and balances of agricultural production that the size of the labor force in agricultural production in Macedonia is rather high compared to that in Croatia. It is also significant that more than 50 percent of the labor force in fishing is in Croatia, where it is larger than the aggregate labor forces in the five other republics.

In view of the area under forests, the largest labor force in forestry in 1982 was in Bosnia-Hercegovina and Croatia, while the water management organizations in SR Serbia and Croatia hired the largest number of workers.

7045

CSO: 2800/35

## CROATIAN ECONOMIC COOPERATION WITH KOSOVO

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 23 Aug 84 p 1

[Article: "Expansion of Cooperation With new Program"]

[Text] Zagreb, 22 August--A Kosovo delegation, made up of Chamber of Commerce President Musamedin Azemi, Executive Council Deputy Chairman Nazmi Mustafa, and Electric Industry Managing Committee Chairman Sadik Vlasaliu, held a discussion at the Rade Koncar SOUR with Croatian Chamber of Commerce President Ante Milovic, his associates, and representatives of the Croatian National Assembly Executive Council and ZEOH on specific questions relating to additional outfitting of coal mines and expansion of power engineering facilities in Kosovo, and to certain aspects of self-management pooling of the labor and funds of associated labor organizations in Croatia and Kosovo.

The vice president of the Rade Koncar SOUR, Dr Bozidar Francic, rated past cooperation with the Kosovo electric industry as successful, and announced that part of the equipment supplementing the operation of dredges in strip mines, the conveyor system, and coal charging machines will be delivered and installed by the end of September or in October.

Another subject of discussion was delivery of the transformer stations, turbo-generators, and other equipment in the Rade Koncar production program, especially from the viewpoint of unification of solutions in future construction of electric power facilities in Kosovo, as well as more intensive participation by Rade Koncar in construction of industrial shops with which the Elektroprivreda Kosova is subsequently to qualify itself for maintenance, rebuilding, and expansion of current electric power sources.

It was pointed out on this occasion that over the last 3 years 65 partners in Croatia have signed 20 agreements with industrial organizations in Kosovo covering 19 joint programs, and in this process have committed 5 billion dinars, an inadequate amount, out of the Federal Fund for Underdeveloped Regions, or 32.6 percent of the 5-year obligation. These agreements are based on introduction of modern technology into manufacturing processes and marketing of new products to meet the increased domestic and export needs, and also on greater use of economic resources and replacement of imported raw and reproduction materials. The key factor is represented by income relationships, along with joint risks in operation, but such relationships still are not being consistently regulated, because joint interests do not rest on a long-term basis and because of

the exaggerated societal emphasis on orientation toward extensive production. The program affects five sectors of the economy, from the agricultural industry and metalworking complexes to the construction, textile, and rubber industries. Several joint development programs are currently in preparation, the most important of which are the footwear factory in Pec (with the Borov), the brick kiln and brickmaking equipment shop in Pristina (with the Dalit), the spinning mill at the Printeks in Prizren (with the Astra, Unitas, Pionirka, MRC, and others), the spinning mill and carpet factory at the Inteks in Gnjilane (with the Tekstilpromet, Nama, and others). Mention has also been made of a number of joint construction offers.

6115

CSO: 2800/468

SWITZERLAND TRAINS YUGOSLAV CONSTRUCTION WORKERS

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 28 Aug 84 p 2

[Article: "Yugoslav-Swiss Agreement on Construction Workers: Free Training for Seasonal Workers"]

[Text] The Federal Employment Bureau and the Swiss Builders' Association are planning to expand cooperation in training of Yugoslav seasonal workers engaged in construction work in Switzerland.

The first course, attended by 50 workers from 9 January to 2 March, has been rated as highly successful. Hence it has been agreed that the number of trainees will be increased to 80 next year, and even heavier participation is planned for several years to come. The Swiss will continue to pay most of the costs, but the weekly compensation per candidate will be raised from 100 to 150 francs.

This training is free of charge to the workers, and it yields many benefits. The certificate attesting to acquisition of skills opens doors to more rapid employment in Switzerland, and yields advantages when the workers return to Yugoslavia. Those who have completed the course will earn more and have prospects for further skill improvement.

Training centers have been organized in Belgrade, Bihac, and Prizren, with 7 Yugoslav instructors trained in Switzerland. Another 6 will be trained in 1985, since plans call for opening 2 new centers in Macedonia and Kosovo. Instruction is given exclusively during the off-season winter months. Workers employed in construction work for at least one season in Switzerland may apply, through their employers, for the next professional qualification course.

On the average, about 15,000 Yugoslav seasonal construction workers are employed on an organized basis in Switzerland. The majority of them are unskilled, while there is an increasing need for skilled construction workers.

6115

CSO: 2800/468

## REPUBLIC BREAKDOWN IN FOREIGN TRADE, JANUARY-JUNE 1984

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 30 Aug 84 p 3

[Article by Milorad Urosevic: "Half-Yearly Foreign Trade Results: Varying Contributions to Appreciable Improvements"]

[Text] There are grounds for satisfaction, but not enough for long-term peace of mind, to judge by the definitive data for the first 6 months, published just a few days ago by the Federal Bureau of Statistics after obtaining them from the Public Accounting Service, on the operation of associated labor organizations engaged in material production over this period. Comparison with the accomplishments over the same period in 1983 shows that foreign trade was much more satisfactory over the first 6 months of 1984. The exports of 593.4 billion dinars, along with imports of 670.6 billion, mean that goods representing 88.50 dinars were exported for every 100 dinars of imports; this is more satisfactory than the planned coverage of imports with exports in 1984, while the negative balance has been reduced to 77.2 billion dinars, one-third less than during the same months last year.

However, accomplishments are one thing and the plan another. According to the latter, exports should have been about 17 percent higher. In fact, this is the amount by which exports fell short, causing an 18 percent decline in imports. The result has been that many sectors of industry have had to reduce production because of a shortage of raw and reproduction materials, including those earmarked for direct production for export. Whether it was necessary to export more first to ensure heavier imports, and then export again, or first to import more to maintain continuity of economic operation is an old dilemma like the one involving the chicken and the egg, but apparently at this moment a somewhat more crucial one.

It is entirely normal for all industrial organizations not to be able, for a variety of reasons, to be unable to produce for export, but it is just as well known that the same attention is not paid in all sectors to the international division of labor.

The available data reveals the extent of participation by individual socio-political collectives in the results obtained.

The differences in the level of economic development and other elements influence the absolute export and import figures, so that these data can contribute

little to an objective assessment. But the degree of coverage of imports with exports, which is the most important indicator, reveals what should be stressed. As was stated at the outset, exports representing 88.50 dinars have been exported for every 100 dinars of imports. In this category, Serbia less the provinces exported 108.90 dinars per 100 dinars of imports, but Vojvodina only 62.40 dinars and Macedonia 64.30 dinars. Slovenia's exports were 2.6 times higher than imports, while these two amounts were more or less the same in the case of Kosovo. Bosnia-Herzegovina and Montenegro are roughly equal, with 95.5 dinars of exports per 100 dinars of imports, while Croatia, with approximately 90 dinars of exports per 100 of imports, has made considerable progress over earlier years, when it regularly lagged behind.

The situation as described has resulted in the deficit in question as a common denominator, and this calls for a somewhat more detailed explanation. Bosnia-Herzegovina, Montenegro, Croatia, Macedonia, Vojvodina, and the Federal Government together showed a deficit of 92.05 billion dinars; their share in percentage is shown in the column headed "share of deficit," the last one in the table. At the same time, Serbia less the provinces, Slovenia, and Kosovo showed a surplus of 14.85 billion dinars, the negative balance of the first six entities being reduced by this amount. The share of the three positive sociopolitical collectives in creation of the surplus is also shown in the last column of the table, preceded by a plus sign.

It may be inferred from all that has been said that, with slightly greater commitment on the part of the first four republics and Vojvodina, the half-yearly foreign trade could be made equal to, if not actually greater than, imports. Trade in the convertible and clearing currency areas will be dealt with separately.

Table. Foreign Trade, January-June 1984

1) Državno-politička zajednica	2) U milijardama dinara			5) Pokrivenost uvoza izvozom	6) % udjela u:		
	3) Izvoz	4) Uvoz	Deficit		7) Izvoz	8) Uvoz	9) Deficitu
SFRJ 10)	49 427	670.626	77.190	83,5	100,0	100,0	100,0
- Bosna i Hercegovina 11)	12.427	55.806	4.400	95,4	15,6	14,4	4,9
- Crna Gora 12)	2.034	12.649	585	95,5	2,0	1,9	0,2
13) Hrvatska	125.357	140.748	15.391	60,1	21,1	21,0	16,8
14) Makedonija	31.293	48.812	17.419	64,3	5,3	7,3	19,0
15) Slovenija	117.737	114.740	+ 2.997	102,0	19,9	17,1	+ 20,2
- Srbija van 16)							
17) pokrajina	144.872	135.007	+ 11.815	108,9	28,4	19,8	+ 79,6
18) Kosovo	11.877	11.039	+ 38	100,3	2,0	1,8	+ 0,2
19) Vojvodina	57.102	51.409	34.367	62,4	9,9	10,6	37,4
- FEDERACIJA 20)	690	20.957	19.817	3,4	0,1	3,1	21,5

Key on following page

Key:

- |   |                           |
|---|---------------------------|
| 1. Sociopolitical collective                      | 10. Yugoslavia            |
| 2. In millions of dinars                          | 11. Bosnia-Herzegovina    |
| 3. Exports  | 12. Montenegro            |
| 4. Imports  | 13. Croatia               |
| 5. Percent of coverage of imports<br>with exports | 14. Macedonia             |
| 6. Share, in percent, in:                         | 15. Slovenia              |
| 7. Exports  | 16. Serbia less provinces |
| 8. Imports  | 17. Kosovo                |
| 9. Deficit  | 18. Vojvodina             |
|   | 19. FEDERAL GOVERNMENT    |

6115

CS0: 2800/468

## DECLINE IN CAPITAL INVESTMENT WORK ABROAD

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 27 Sep 84 p 5

[Article by Stojan Zdravkovic: "Narrowing the Front of Activity"]

[Text] Construction activity on capital investment projects abroad is characterized in the first half of this year by a reduced volume of work contracted for and done. Even in the first quarter the amount of work contracted for dropped by more than one-fifth from the same period of last year. The registered value of work done shows still less favorable tendencies, since it recorded a drop of one-third.

## Construction Work and Project Planning Services Abroad

Republics and Autonomous Provinces	Value of Construction Work and Project Planning Ser- vices Contracted for			Value of Construction Work and Project Plan- ning Services Done		
	Total in Thousands of U.S. Dollars					
	1982	1983	1st-3d Quarters 1984	1982	1983	1st-3d Quarters 1984
SFRY	2,944.0	3,128.2	2,088.0	2,509.2	2,624.8	451.1
Bosnia-Herzegovina	574.6	540.3	376.8	466.5	433.6	90.8
Montenegro	8.6	3.2	0.3	7.4	3.1	0.1
Croatia	399.7	463.4	371.3	328.0	381.8	71.9
Macedonia	136.0	243.7	188.7	159.1	227.8	34.4
Slovenia	398.8	484.3	283.6	359.2	447.7	90.7
Serbia	1,427.2	1,393.1	867.2	1,189.0	1,130.8	163.2
Serbia proper	1,287.8	1,358.0	854.8	1,055.7	1,106.5	160.7
Kosovo	1.8	1.9	2.7	1.7	1.1	0.7
Vojvodina	137.6	33.3	9.7	131.6	23.2	1.7

	Share of Building Supplies and Equipment in Work Done, %		
	1982	1983	1st-3d Quarters 1984
SFRY	10.5	7.1	7.2
Bosnia-Herzegovina	32.8	29.6	20.6
Montenegro	--	--	--

Table (continued)

Republics and Autonomous Provinces	Share of Building Supplies and Equipment in Work Done, %		
	1982	1983	1st-3d Quarters 1984
Croatia	1.1	1.8	0.4
Macedonia	0.1	0.2	1.4
Slovenia	12.4	4.8	4.7
Serbia	5.2	2.6	5.1
Serbia proper	2.5	2.1	4.2
Kosovo	--	--	--
Vojvodina	27.6	23.2	77.4

Source: INDEKS, Nos 5 and 6, 1984.

In the second quarter the former indicators came back to some extent, but as a whole they remained considerably below results for the same period in 1983. However, the numerical indicators do not tell us enough about the tendencies manifested in performance of work abroad.

#### Tougher Competition is Driving Prices Down

Under the impact of the fiercer international competition the prices at which new projects are contracted for average 10 to 15 percent lower than those obtained in previous years. As a consequence it is now necessary to increase the volume of work performed by at least as much in order to achieve the previous value of work contracted for or performed. At the same time late collection for work performed (postponement of payment), which was manifested even last year, is a very great problem and so far this year has only been aggravated still more, so that at this point the statistical indicators are clouded over to some extent. Since the terms and conditions for payment of work performed allow investors a grace period of at least 2 years (especially those from Iraq, where this problem is most pronounced), that portion of work performed is not for the present being included in the value of work, which detracts from the picture of the export activity of this segment of the economy.

Other difficulties accompanying the business of the Yugoslav construction industry on the foreign market are also being noted more and more frequently. This refers first of all to the lack of capital for new investment projects in the developing countries, especially those which have based a large part of their progress on the production and sale of petroleum. For example, Nigeria, which is the most important potential market for work on capital investment projects in Africa, not only for our own construction industry, but also for that of other countries, has in the last year or two been earning half as much from petroleum as 5 or 6 years ago. Nor are the conditions much different in the other OPEC countries in which our construction industry might do business. That is why it is indispensable even now to seek new markets, since the time has passed when the exports of the construction industry can be associated with only one country or one region.

Along with this problem there are the difficulties arising with collection of old accounts receivable (payments on credits which have come due are not being met continuously in most of the developing countries), so that there is a lack of capital for investment in programs which might be started on other markets.

#### Commercial Banks Are the Bottleneck in Credit Financing

Some of the work performed is being paid for with deliveries of petroleum by the investors from certain countries in which the work is done (arrangements of this kind are most frequent with Libya). However, because of payments-balance difficulties that exist in overall relations with foreign countries, the petroleum obtained is refined and consumed before payment from the National Bank is received by the construction organizations which participated in performing the work on the capital investment projects. It takes a year or more from the shipment of the petroleum to the date when settlement [illegible] the National Bank, which has the effect of reducing the business capabilities of organizations [illegible].

Commercial banks have become the bottleneck in credit financing. While the Yugoslav Bank for International Economic Cooperation (JUBMES) is still somehow providing credits, although it is costing considerable effort, most of our commercial banks are slow to set aside resources for credit to finance work to be done abroad, since various coercive administrative measures have committed the resources to other purposes. Nor has the issue been resolved of subsidizing lower rates of interest on that portion of the credit which these banks are to extend. The adverse consequences are usually expressed in the inability of construction contractors to draw up a bid whose terms and conditions are competitive with firms from other countries.

The competitiveness of the Yugoslav construction industry continues to be diminished by a lack of uniformity in the level of personal incomes paid to workers employed on projects outside the country. In a specific survey conducted by ZIT [Market Research Institute] organizations of associated labor in the construction industry emphasized the need for urgent adoption of an adequate social compact on the manner of payment and level of remuneration for the work of employees engaged on projects abroad, since problems (social welfare and other problems) are cropping up which parallel the disloyal competition among our organizations and have a direct impact on their price component when they are submitting bids.

Although there is a great deal of talk about the need for organized representation concerning work on capital investment projects outside the country, little is being done on this. Contract work is still solicited on an individual basis, piecemeal, and the sense of community is not honored by the organizations of associated labor in carrying out programs, which makes the submitting of bids more expensive and at the same time reduces the probability of obtaining contracts at all. Not enough use is made of the foreign trade network that exists for obtaining information and for surveying individual markets nor for gathering information on investors' intentions. Organizations are slow to become aware of the need for reaching agreement when the occasion arises of competition for the same contract, although this method of organized representation would make it possible to overcome petty individual interests and create

an organized front toward the firms of other countries also bidding for the same contracts.

#### The Shortcomings of Tax Policy

As in the same months of last year, once again some of the problems which were previously pronounced are evident, and because of their frequency or unchanged importance they should be indicated. Almost nothing is being undertaken in order to monitor appropriately the inflow of foreign exchange from performance of work on capital investment projects abroad, which is detracting from the possibility of organized public support of that work. The amount of incentives for work on capital investment projects is ascertained only on the basis of the profit realized and brought into the country, and is not monitored with respect to other sources which also constitute inflow of foreign exchange (for example, the 50 percent of personal incomes paid to employees in dinars, expenditures for administrative and sales overhead, social security, etc.).

The double taxation of organizations performing work on some of the large markets (Iraq, Libya) continues to exist, since the organizations of associated labor are paying taxes and other obligations both in our country and in the domicile country where they are doing the work. As is well known, the export of equipment by domestic manufacturers for construction projects abroad is treated the same way as conventional visible exports, but the construction organizations which directly contributed to this do not qualify for any sort of rights, nor is their contribution to the growth of domestic exports acknowledged in any way. As a consequence the share of equipment and building materials exported through work on capital investment projects is lagging behind more and more. In 1982 it amounted to 10.5 percent of the value of construction work performed, and last year it dropped to 7.1 percent. In no year has this percentage been exceeded to any considerable extent. Nor have solutions been provided to the problem of the treatment of advances on work performed or a number of other problems related to collection for that work.

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